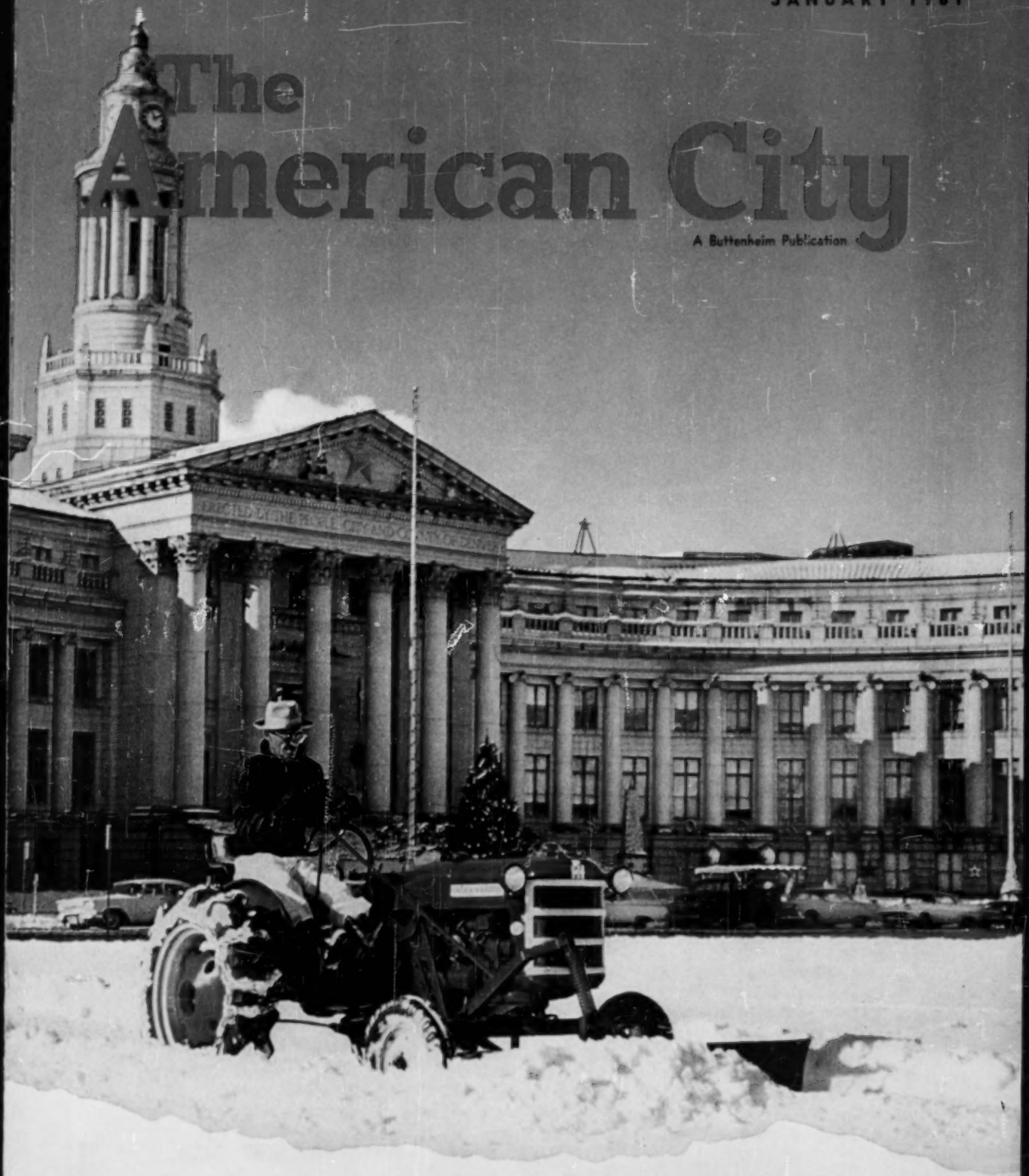
JANUARY 1961

The American City

A Buttenheim Publication



Denver, Colo., City Hall Park "Winterizes" Its Sidewalks. See page 3.

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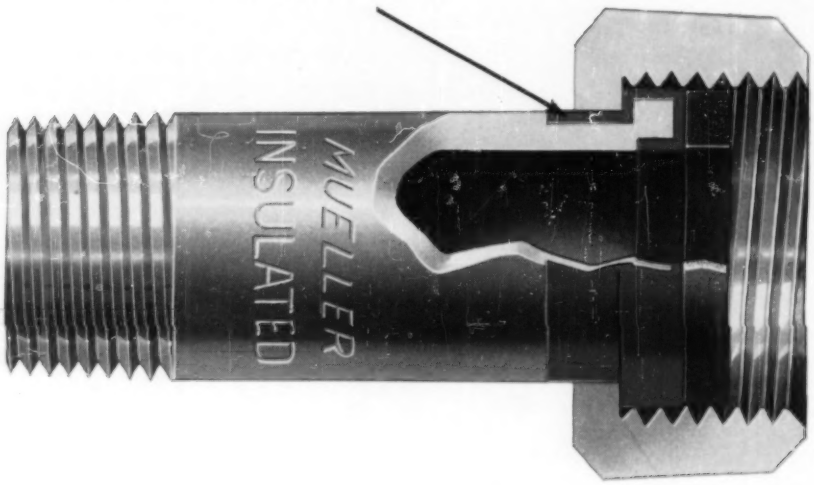

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JANUARY 1961

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Cover Picture

When snow bedecks the city hall of "mile-high" Denver, Colo., an International Harvester tractor has the assignment of clearing the sidewalks. Denver has one of the nation's more graciously designed municipal buildings, enhanced by a beautiful park-like setting.

During this winter period when many cities face serious snow and ice problems, this issue carries two significant stories on how to do the work efficiently. One, "Salt-Calcium Clears Icy Streets Faster," (p. 29), gives details on more effective use of chemicals. The other, "Snow Fighters on Three Shifts," (p. 80), explains how Schenectady, N. Y., geared itself to clear record-breaking snowfalls in such prompt and thorough manner that merchants joined to commend the excellence of the work.

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Police Motorcycles

Volume 76 Number 1

The American City

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LETTERS TO THE EDITOR

Sewerage Pacts

Your description of the Allegheny County Sanitary Authority is in general accurate, but a few more details may describe its operations more clearly (Metropolitan Sewerage Pacts, Dec. 1960, pp. 143-47).

First, we have certain financial and operating safeguards that guarantee a high performance standard. For example, we are required to employ a consulting engineer on an annual basis to keep close check on operations, the condition of the property, and the annual budget, which he must approve. The consulting engineer appointed by the Authority must not be objectionable to the Trustee under the bonds. Also, our affairs are subject to review by the Pennsylvania Attorney General at his will. Finally, the sewage charges are subject to review by the Court of Common Pleas upon the complaint of any customer. Most authorities are not subject to these controls but would find it profitable if they were.

Next, ours is a joint authority of the City of Pittsburgh and the County of Allegheny. The five members of our governing board serve without pay for five-year terms.

The reluctance of some communities to participate in this sanitation project may also be instructive to other areas studying this plan. We have 129 municipal subdivisions within the county. Of these, only 4 chose originally to participate. Upon the failure of this county-wide plan to gain general acceptance the City of Pittsburgh authorized the Autority, by agreement, to prepare a study and plan which would provide a service to the city at the lowest possible cost, permitting, however, the inclusion of any other municipalities, provided that the cost of serving them did not increase the cost to the city. It was not possible, under this stipulation, to provide increased facilities in anticipation of latecomers. Sixty-seven municipalities, including the City of Pittsburgh, of the total of 71 now under agreement for service qualified under this stipulation. Nevertheless three of the four municipalities that joined late have taken the Authority to court, arguing that they are entitled to the same basic rate as those who joined originally, regardless of the agreements entered into by these communities seven years ago to pay back to the Authority in the form of extra sewage charges over the life of the bonds the almost $1 million which it spent to extend the basic system (including three pumping stations) 3½ miles to serve the 10,000 people in the four communities.

It may be of interest, also, to note that the Authority makes an extra charge for use of household garbage grinders connected to the sewer system, and for excessive suspended solids, BOD and chlorine demand of industrial wastes.

Incidently, Mr. Joseph J. Olliffe is now Executive Director of the Authority, appointed after my retirement on September 1 of last year. Mr. Lawrence M. Gentleman is now Chief Engineer.

JOHN F. LABOON, *Consultant*
Allegheny Cty. Sanitary Authority
Pittsburgh 33, Pa.

Yield Signs

Mr. Franking's letter to the editor regarding the use of the "yield" signs shows a good insight into their real meaning and use.

Traffic engineers in general are constantly trying to rebuild this "respect for reasonable regulations." In the past we have too often cried "wolf" with too many stop signs, too low speed limits, and other unreasonable restrictions.

In Cleveland we started a program of installation of "yield signs several years ago. We made very careful study before each installation. Now we have hundreds which are working very well. In each installation, while the regulation was still new to the motorist, we installed the yield only where we were sure that it was regulating what the motorist would naturally expect. As the motorist continues to see and respect this sign, we will install more and more where possible. We have captured the driver's confidence.

ROBERT J. KELLY, *Commissioner*
Cleveland, Ohio

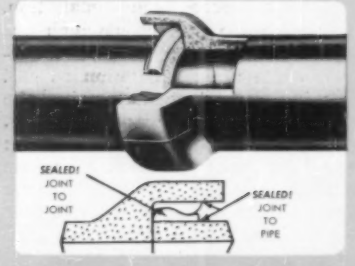
Urban Highways

The following two articles in the September 1960 issue of THE AMERICAN CITY are excellent examples of the impact of the expressways upon urban areas, "Already Overloaded," by Paul E. McBride (p. 121) and "Fort Worth Freeway Breaks the Rules," by W. J. B. Baker (p. 145).

GORDON B. SHARPE, *Secretary*
AMA-AASHO Joint Committee
on Highways
Washington, D. C.

Sanitation, a vital element, but . . .

Sewer System *only as good as* House Connections



Inferior quality house connections to sewer mains pull the big line, however well designed, back to inferior level. Infiltration in small lines discharges excessive ground water into the main, taxing its capacity . . . Wedge-Lock* Clay Pipe helps cities beat this problem. . . . Four through six-inch diameter Wedge-Lock in house connections gives triple protection against infiltration, exfiltration and roots. Reduces load in sewerage. . . . Reduces plant pumping. . . . So *safe*, it can be used *under* basement floors. Conforms to ASTM Specifications C 425-58T, Type 1. Put it in *your* plumbing code.

* Pat. T.M. Reg. U.S. Off.

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JUST OFF THE PRESS! BROCHURE DESCRIBING WEDGE-LOCK INSTALLATIONS. *WRITE FOR FREE COPY!*

Council Management Myths

As the new year dawns, we find ourselves faced with the usual spate of rather ostentatious nonsense about the administration of our cities. The most recent of these pontificates over the council-manager form of government—the fastest-growing form. These "experts" advise sonorously that:

• under this form the mayor is no more than a ceremonial figure-head who approves without question those acts that the manager arbitrarily and dictatorially orders

• the council-manager form, while suitable for small municipalities and satellite communities in a metropolitan complex, does not work in large cities

Let's take the first of these, that these mayors are only sheep-like ceremonial heads with no real decision-making powers.

The American Municipal Association recently elected Mayor Don Hummel, Tucson, Ariz., for its president. In his inaugural speech, Mayor Hummel crisply told his conferees that he expected to renew efforts to consolidate activities of the U. S. Conference of Mayors and the American Municipal Association. Later, he said that while he didn't plan to work for a merger of the two groups, he at the same time didn't rule out the possibility. This obviously is the voice of a man who makes up his own mind and speaks out on a controversial subject. Yet Tucson is a council-manager city.

At that same meeting, the delegates heard a resolution, proposing that federal aid be provided for training in city planning and urban renewal. Mayor G. H. Gilbert, Arvada, Colo., briskly arose to speak against the resolution, was persuasive enough to win his point. He, too, is a mayor of a council-manager city.

Also, at the same meeting, a resolution on municipal labor relations came before the floor. Norfolk's Mayor W. F. Duckworth and Fort Worth's Councilman T. D. Thompson argued, against the resolution committee's recommendation, that there was no reason for an AMA stand on this question, and they, too, won their point. Here again, both men came from council-manager cities.

If such outspoken men as these are sheep, then let the wolves beware. If they are ceremonial heads only, then ceremonies have changed abruptly recently.

Now let us consider the suitability of the council-manager form for larger, non-satellite cities. Take Mayor Don Hummel's home city of Tucson. If anyone thinks that Tucson is a satellite, he does not know Arizona. But even a clearer, more vivid example is Phoenix in the same state. This city's economic and physical growth have been phenomenal; it has twice won the coveted All-America City award and it too is far from a satellite of any urban center. Yet it has not only been council-manager operated but has been the training ground for some 40 city managers serving other municipalities across the nation.

Whether Fort Worth is a satellite of Dallas, or Dallas of Fort Worth, is a question that only Texans will be able to answer. Nevertheless, both cities operate under the council-manager form, as do non-satellite Austin, San Antonio and about 130 other Lone-Star cities.

Incidentally, Galveston, originator of the commission form of government, is a rarity among larger Texas cities in that it experienced only sluggish growth, bordering onto stagnation. Last year it junked the commission form and switched to the council-manager.

A few years ago, *Fortune Magazine* surveyed the major cities of the country and picked Cincinnati as best. By doing so it picked a council-manager city, the hub of a metropolitan complex.

The most exciting developments in metropolitan government are today taking place in the Miami area. Significantly enough, Metropolitan Dade County, Miami, and Miami Beach all are council-manager operated.

Of course, one recognizes that the form of government is less important than the ability, energy, and devotion to duty exemplified by the men themselves, as well as by the unselfish support of the citizens who elect them. We have many inspiring examples of dedicated men in non-council-manager cities who have brilliant records of civic progress.

Nevertheless, anyone who concludes that the council-manager form of government is suitable only for small cities or satellites of large metropolitan centers, and who decides that the mayor of a council-manager city is only a ceremonial figurehead, should look more closely at the facts.

SELF-CONTAINED MACK PUMPERS are ready for any kind of blaze. Here, one of Portsmouth's new C-85 1000-gpm pumpers takes suction from a nearby creek, while firemen play out the hoses. Second C-85 cab-forward unit stands by. Progress is reported on two-way radio which fits compactly in cab compartment. Both pumpers and a third on duty with another company feature 500-gallon booster tanks . . . 4½" suction hose . . . have space for 1500′ of 2½" and 800′ of 1½" hose. Each is powered by a Mack Thermodyne engine developing 276 hp and 640 ft./lbs. of torque.

When Portsmouth *"trips the horses"* the Macks really roll

Answering an alarm in Portsmouth, Va., means Macks on the job pronto, whether it's a routine drill, brush fire or a blaze in high-value industrial waterfront property.

Because of this quick response, Chief Odell Benton's efficiently manned Portsmouth Fire Department long ago learned they could rely on dependable Mack apparatus. In the past 17 years, Mack equipment has been found in the front lines of the busiest companies in the department.

Portsmouth's three new cab-forward Mack pumpers maintain the same high tradition . . . in only nine months they have won high praise for their performance.

Mack apparatus pass every performance test for good reasons—Mack Thermodyne® engines, gasoline or diesel, to 276 hp . . . automatic or standard transmissions . . . air or hydraulic brakes . . . and the gear ratios and equipment you need for the most demanding fire-fighting assignment.

Investigate adding steady-performing Mack apparatus to your department. Performance records show Mack apparatus to be the most dependable in the service. Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

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FIRST NAME FOR
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COMPLETE LINE OF PUMPERS—500 to 1250 GPM...SQUAD AND HOSE WAGONS...AERIALS 65′ to 146′...COMBINATION LADDER TRUCKS

SPLIT-SECOND RESPONSE—Both highly trained Portsmouth Fire Department and its Mack fire apparatus are on the move as soon as the bell sounds. Portsmouth took delivery of its first Mack pumpers in 1943 . . . still has them operating.

The city applies a dust-laying asphalt to unimproved streets on a pay-as-you-go basis.

How Council Bluffs Oils Unimproved Streets

Council Bluffs, Iowa, will place a dust-laying oil on an unimproved street only when the property owners collect the necessary money to pay for oil in advance. The city asks the owners to buy the oil only and does not charge for labor or equipment; the oil costs 10 cents a gallon. The city uses an SC-2 cutback asphalt for this work and does not guarantee that the material will remain effective for any stated period.

This refusal to guarantee the life of the surfacing is written into the city's agreement with the owners. Neverthless, the treatment will last approximately six months, depending on the weather. City Manager Paul L. White reports that the average cost to the property owner is about 10 cents per lineal foot for a 26-foot road width.

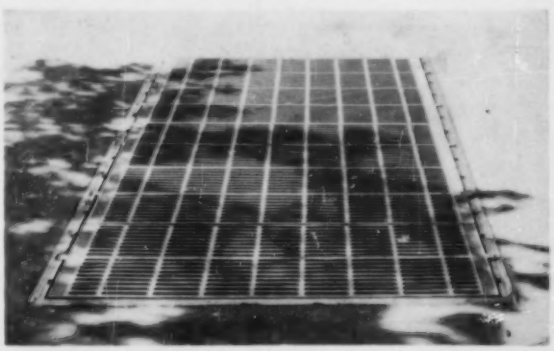
The city cleans the side ditches, grades and shapes the roadway surface, then applies the oil and blots it with a sand coat. A Standard Steel Works distributor on an International truck chassis places the asphalt. A Wm. Bros tank-car heater is used to unload the asphalt prior to use. ◄◄

Rattle-Proof Street Gratings

Roadways in New York City and on the Massachusetts Turnpike will suffer less from "street-grating chatters" in the future. Both the Consolidated Edison Company of New York and the Massachusetts Turnpike Authority recently turned to ductile iron to solve this noise problem and still fulfill the requirements for coverings and gratings on streets and highways.

Consolidated Edison often finds it necessary to bank many transformers below street level. Since the vault boxes must be vented, the company uses street manhole gratings for this purpose. Material for these gratings must be as corrosion resistant as cast iron, have the strength of steel and a configuration which assures a consistent fit, sufficient to eliminate the noise which is created by heavy traffic passing over the cover.

The Crompton & Knowles Corp., of Worcester, Mass., met these conditions with cast ductile-iron gratings. To eliminate noise, the Massachusetts Turnpike used about a thousand tons of ductile iron gratings. Because they seat accurately in their frame and maintain a true plane surface, these gratings reduce the noise level to that of the solid roadway. ◄◄



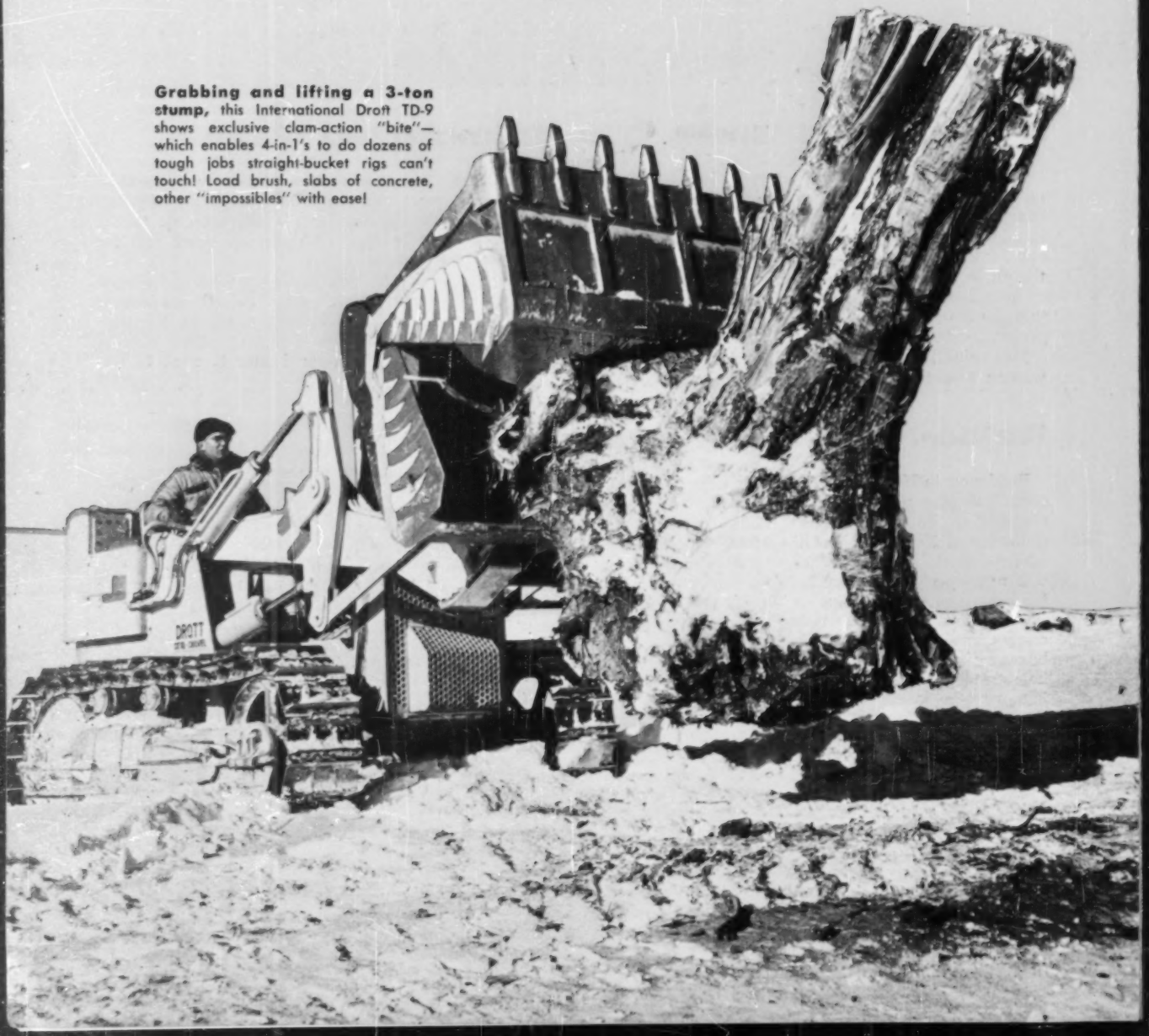
This noise-free ductile-iron grating covers one of Consolidated Edison's many below-street-level transformer vaults.

Choose the "bucket with the bite..."

an exclusive clam-action 4-in-1... and

Your City Gets A Whole Equipment Spread of Job-speeding Actions!

Grabbing and lifting a 3-ton stump, this International Drott TD-9 shows exclusive clam-action "bite"—which enables 4-in-1's to do dozens of tough jobs straight-bucket rigs can't touch! Load brush, slabs of concrete, other "impossibles" with ease!



"Dragonized" to dramatize "the bucket with the bite," the stump-toting International Drott TD-9 Four-in-One demonstrates one of the many exclusive *plus-actions* the exclusive clam-action delivers!

Move the hydraulic selector lever and quick as a wink you also get full-capacity, full-range depth-controlled bull-dozer action. Two seconds later, you can be grading, stripping, or spreading materials, "carry-type scraper" fashion, with inch-close accuracy. Next instant, the 4-in-1 can be positively bottom-dumping sticky materials that stop other rigs "in their tracks." Then, like a flash it can be back-dragging to grade, pick up, or pull down materials. Or "clamming-on" to heavy, unwieldly "impossibles" like stumps and loading them wholesale!

In addition, the 4-in-1 gives you the top excavator-loader performance on the market – including certified break-out forces ranging from 11,200 lbs with the T-340 to 43,150 lbs with the TD-20! And only the clam-action 4-in-1 has the performance-protection of exclusive shock-swallowing Hydro-Spring.

See for yourself how many "machines" the only modern loader is–how many thousands of dollars of "budget relief" a 4-in-1 can deliver your city. Prove you get a whole spread of work-speeding actions–that obsolete "single-action" loaders, and double for a yard-full of limited-duty rigs! Let your International Drott Distributor demonstrate!

See how "the bucket with the bite" delivers sanitary landfill efficiency no other outfit even approaches. The clam-action 4-in-1 can spread, level, cover, and compact refuse to guarantee minimum-cost sanitary landfill waste disposal. Here, the TD-9 Four-in-One as "carry-type scraper" is evenly covering on-the-go, refuse it had "layered" and "ironed down."

Another "biting action" as "carry-type scraper"—this TD-15 Four-in-One is grading a street with inch-close accuracy. Watch the earth "boil" in! You can strip and spread materials with this same versatile action!

End the sticky materials problem for good with 4-in-1 clam-action—even where other loaders are helpless. Note how opening the clam of this TD-15 Four-in-One pulls material from bucket surfaces—gravity pull does the rest, to enforce clean dumping!

With the clam up and the blade segment in position, "the bucket with the bite" doubles for a full-size, full capacity bulldozer—'most anywhere. This TD-9 Four-in-One is grading for sidewalks in a new subdivision.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

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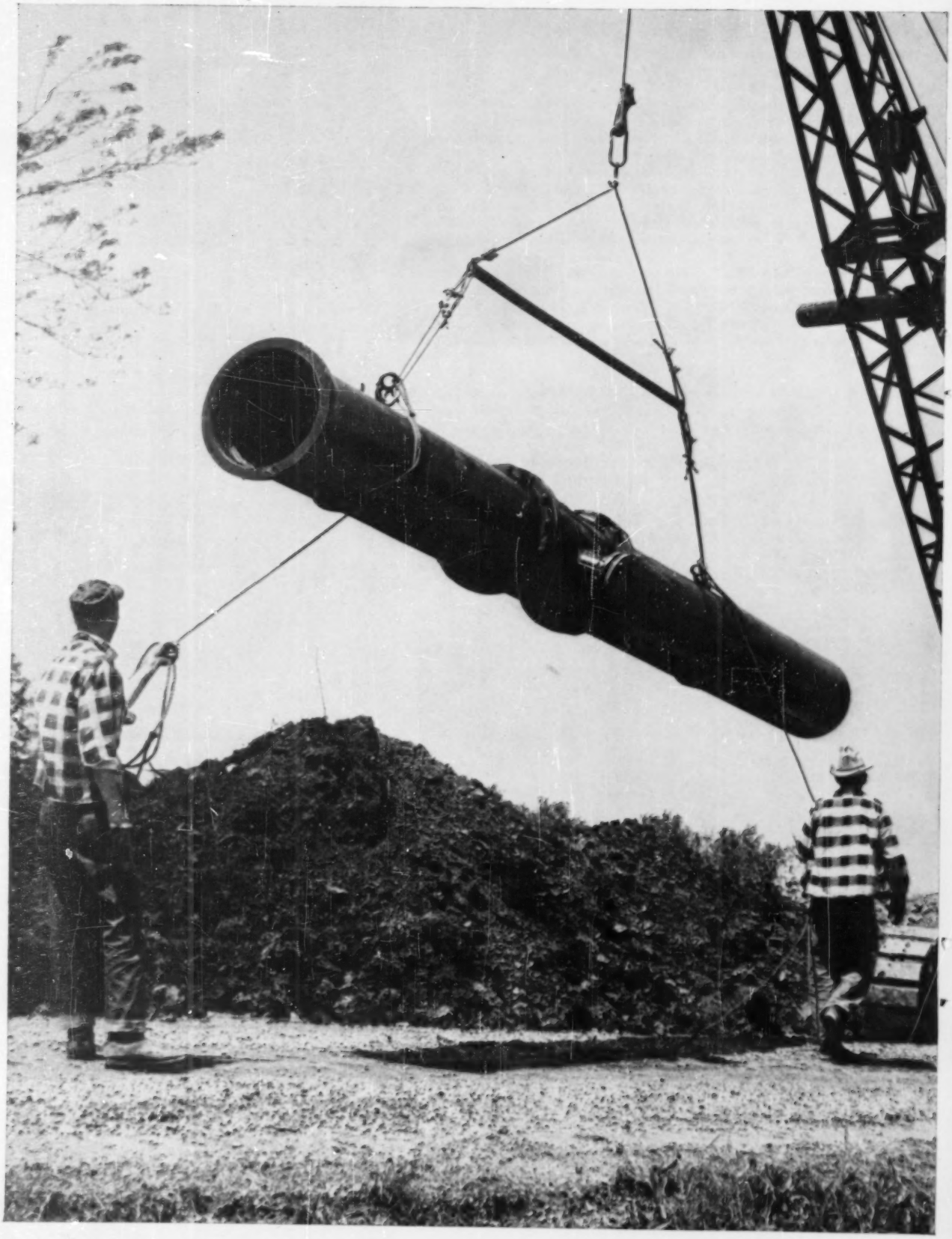
DROTT®



PIPE THAT SHOULDERS A HEAVY LOAD WITHOUT SHOWING ITS AGE

Recently installed in a town in Illinois, this cast iron pipe water supply system now serves a large industrial area.

Besides the internal pressure of supplying the heavy daily demand, there is a heavy load overhead, too. The industrial area is a packaging and distribution center. Large numbers of fully loaded rail cars and trucks come and go every day.

As far as the cast iron pipe is concerned, this is all in a day's work.

Cast iron pipe shoulders heavy loads—interior and exterior—year after year; performs efficiently for a century or more.

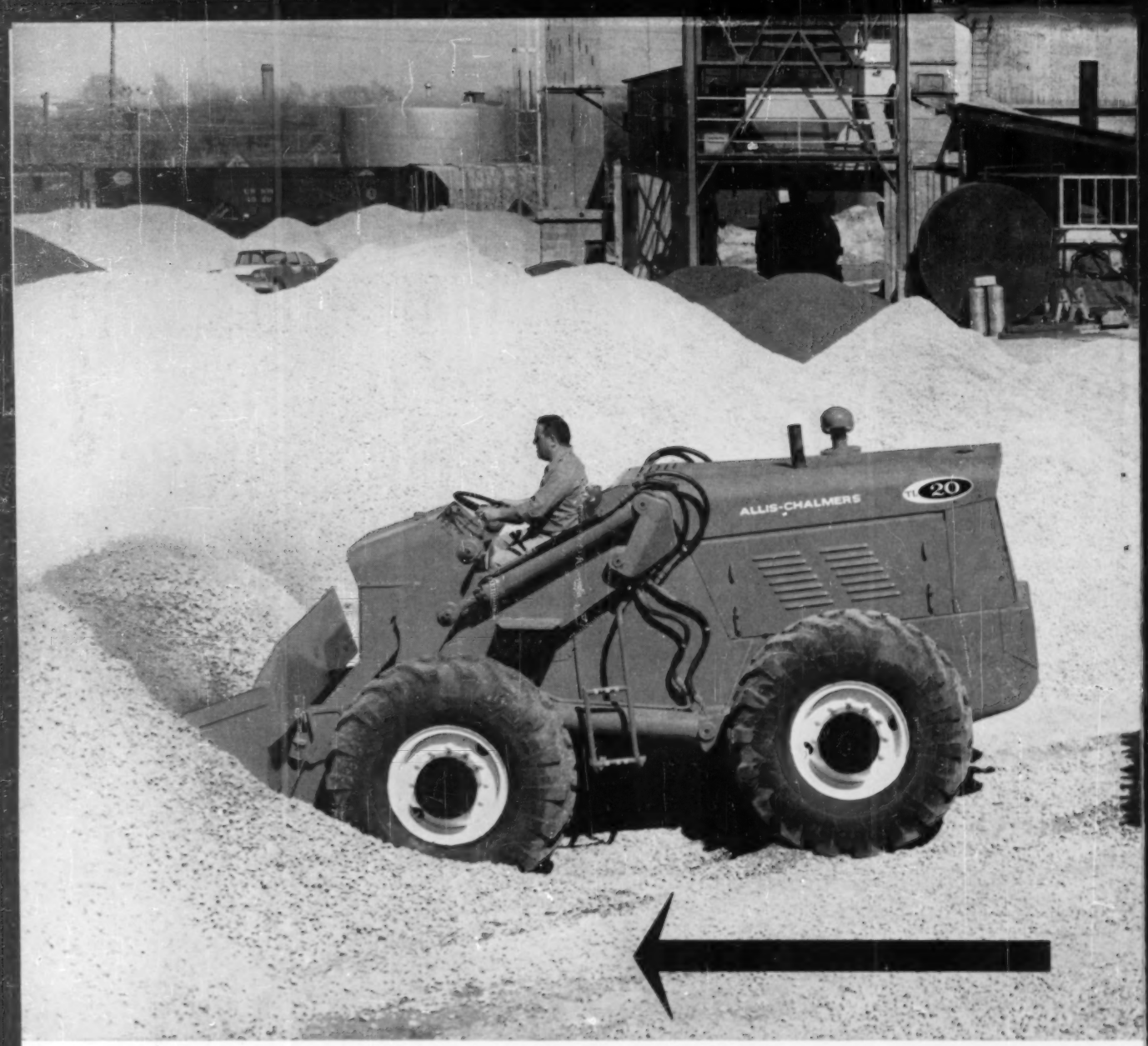
And it always delivers a full flow of water.

Advertising campaign from Cast Iron Pipe Research Association shoulders a heavy load, too!

For years the Cast Iron Pipe Research Association has attacked the water problem nationally; now, in addition, it is undertaking a new campaign to combat this crisis on a local level. Car cards, speeches, radio spots, newspaper ads, mailing pieces—everything will be included. If your town's problem is apathy or a growing water shortage, we may be able to help. For complete details, write to the Cast Iron Pipe Research Association today!

CAST IRON PIPE RESEARCH ASSOCIATION,
Thos. F. Wolfe, Managing Director,
3440 Prudential Plaza, Chicago 1, Illinois

CAST IRON PIPE
THE MARK OF THE 100-YEAR PIPE



ONLY LOADER WITH . .

You shift from any one gear to any other—forward or reverse . . . on-the-go. Allis-Chalmers tractor loaders make fast work far easier for any operator.

It's simple for a tractor loader operator to work faster—get more done. It's just as easy for him to go into a high gear as into a low gear—forward or reverse. ONE LEVER controls both speed and direction. No fumbling around with two or more levers or a combination of levers and foot pedals.

Besides operating simplicity, a tractor loader has *firmly connected axles*—attached to frame with 2-inch diameter steel pins . . . no rolling and shifting under load. *Extra stability* lets operators get and deliver

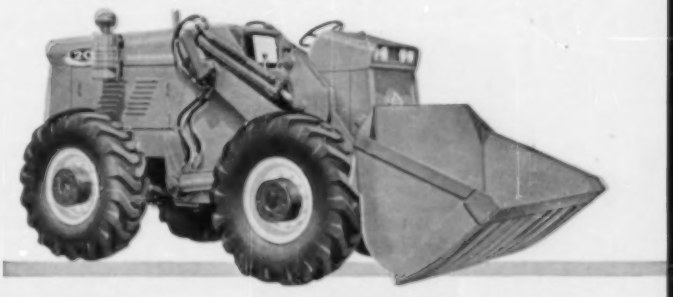
move ahead with

. SINGLE-LEVER SHIFT

bigger loads with greater comfort. Add *extra reach* for fast, even dumping and you can see why production is higher with an Allis-Chalmers tractor loader. Let your dealer show you. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

The "Big Three" tractor loaders range in size from the TL-14 with 5,300-lb carry capacity to the TL-20 (shown) with 9,000-lb carry. Each has a family of buckets—18 bucket loader combinations in all.

Now available in Persian Orange or Allis-Chalmers Yellow at no extra cost.



ALLIS-CHALMERS

. . . power for a growing world

Save on construction costs with the new '61 FORD TRUCKS

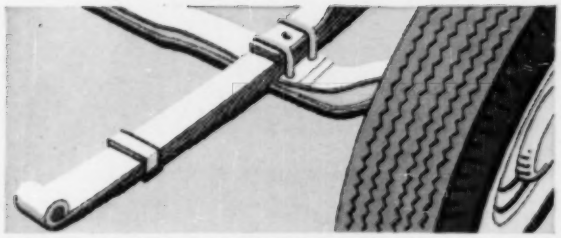
SAVE FROM $31 TO $157 ON PRICE* ALONE WITH FORD'S F-100 STYLESIDE PICKUPS

Contractors everywhere are finding that the half-ton Ford Styleside is priced below all other comparable pickups! And these rugged pickups are designed to keep right on saving with lower maintenance and operating expenses. Their durable, one-piece cab-and-box construction provides increased rigidity and eliminates a major source of rust and corrosion. Not only does the sheet metal last longer with this stronger body, but it also contributes to a quieter ride.

And you can save more . . . because you can carry more on every trip. Styleside bodies are longer and wider with loadspace increased as much as 16%. In addition, wheelbases have been lengthened 4 inches and this combined with the improved shock absorbers gives a ride that's unexcelled in its field—proven by scientific Impact-O-Graph tests. For construction work the angle of approach has been increased so you can climb steeper drives or go over deeper ditches or gullies. Ford also offers America's lowest-priced* 4 x 4 with big 8-ft. box, the F-100 Flareside.

And you can save on operating expense! Ford's Mileage Maker 223 Six is standard on all conventional pickups to keep gas costs low. The economical 292 V-8 is available for jobs requiring extra power. Both engines are equipped with Ford's Full-Flow oil filter that lets you get 4,000 miles between oil changes.

**Based on a comparison of latest available manufacturers' suggested retail delivered prices*



SAVE UP TO $150 ON FRONT TIRES! In certified tests of truck suspensions, Ford front tires lasted up to twice as long. In 50,000 miles, savings can add up to $150 on a pickup . . . more on two-tonners. And Ford's sturdy I-Beam front axle and leaf-spring suspension not only cut tire wear, but their simpler design also cuts maintenance costs.

12,000 MILE OR 12 MONTH WARRANTY

SAVE WITH GREATER DURABILITY . . . on all 1961 Ford Trucks, each part, except tires and tubes, is now warranted by your dealer against defects in material and workmanship for 12 months or 12,000 miles, whichever occurs first. The warranty does not apply, of course, to normal maintenance service and to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points. Never before have you had such protection . . . such evidence of long-term economy!

SAVE WITH FORD'S NEW 262-CU. IN. "BIG SIX" ALL-TRUCK ENGINE FOR TOP PERFORMANCE AND ECONOMY

America's savingest two-tonners offer a big 262 Six with the power of big displacement, the gas economy of 6-cylinder design, plus the durability of heavy-duty construction. This engine features a sturdy stress-relieved block, strong forged steel crankshaft, long-lasting stellite-faced intake and exhaust valves, and durable pyramid-type connecting rods. And Positive Crankcase Ventilation reduces oil dilution and sludge formation to extend engine life. Ford's proven 292 V-8 and 292 HD V-8—the V-8's with "six-like" economy—are also available for your special power needs.

You also save with other new durability features like the more rugged frame, stronger radiator with new lock-seam construction, improved cab and chassis electrical wiring, plus longer, easier-riding and more durable rear springs. Ford's parallel ladder-type frame with standard 34-inch width allows you to install new or transfer your present special construction bodies quicker and for less. Also, the frame drop in the cab area lowers cab height . . . makes for easier entry.

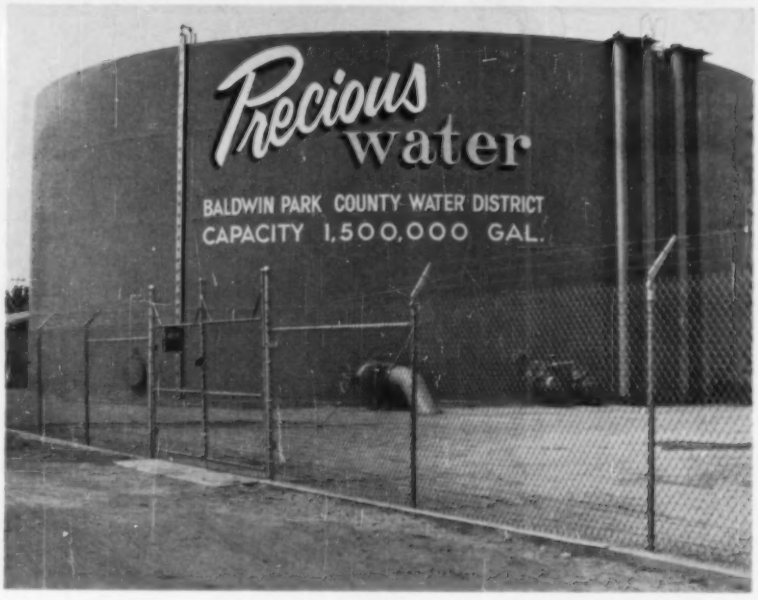
FORD TRUCKS COST LESS

YOUR FORD DEALER'S "CERTIFIED ECONOMY BOOK" PROVES IT FOR SURE...

FORD DIVISION, *Ford Motor Company*

Precious Water

The Baldwin Park, Calif., County Water District informs the public that this 1,500,000-gallon storage tank contains *precious water*. Although Southern California is aware of a possible water shortage, the sign constantly reminds all who see it that water is precious and should not be wasted. In addition to bringing forth many favorable comments, the sign also helps soften such complaints as "my water bill is too high." ◄◄



Utility Bills Computed Electronically

A data-processing organization takes care of utility billing for Bloomington, Minn. Briefly, the method employed is as follows:

- **For each account the firm prepares a master card containing the customer's name, address, account number, meter number, meter size and other pertinent data. We received a meter-reading card for each account. These are "mark-sense" cards on which the meter reader records the water meter reading in figures and also by placing marks in the appropriate spaces with an electrographic pencil.**
- **At the end of each reading cycle the utility forwards the cards to the service bureau.**
- **The service bureau processes the cards electronically, with machines reading the mark-sensing, punching the reading into the cards, computing the usage, multiplying usage by the rate and arriving at the charge for water. The charge is checked against previous billings for reasonableness, compared with a minimum charge, and then punched into the cards—all automatically.**
- **Sewer charges are 50% of the water bill, based on winter-quarter water usage, with a minimum charge. The machines arrive at the correct amount by a process of computation and comparison with minimum. The machine then adds the sewer and water charges to arrive at a total bill.**
- **The data-processing firm delivers to the utility the customer's bill (computed from the billing cards), a billing register or list of bills, accounts-receivable cards, and a new set of meter-reading cards.**

Charges for this process include an initial "set up" or programming charge, a single charge for setting up each account, a charge for each billing, and a flat monthly charge. In Bloomington the initial programming cost $250. The set-up charge for each account is estimated at nine cents and the billing charge is 5.1 cents. The monthly flat charge comes to $21.05. Postage, envelopes, forms and cards are extra.

Bloomington, with a population of over 50,000, faced the situation of having no water and sewer facilities one year—but having over 70 miles of each in service the very next year. With no past procedures, personnel or equipment to limit or restrict the operation, we decided to plan for the long term. This included performance of routine functions such as billing and collecting in the most modern and economical way possible.

Choice of Methods

Alternatives for doing this work included the purchase and use of a bookkeeping machine, purchase of a small computer, rental of tabulating equipment to be placed in our office, and engaging one of three service bureaus using tabulating equipment to do the billing for the utility.

The desire to work toward eventual full automation of our accounting processes ruled out the bookkeeping machine. At the present time we could not economically justify purchase of a computer or rental of a system. Thus the choice narrowed down to selection of one of the three service bureaus.

We selected the firm employing the IBM 650 computer on the basis of a slightly lower monthly cost and the belief that the computer offered somewhat greater flexibility and better possibilities of detecting error. The company is the Service Bureau Corporation, a subsidiary of International Business Machines, Inc.

Presently about 1,000 accounts are billed quarterly and we expect to add between 8,000 to 10,000 accounts in the next year. Eventually, we will have about 25,000 accounts. One-third of the meters are read each month with billing done on a quarterly basis.

SAM H. HOBBS, *Director of Public Works*
and D. C. SOURS, *Comptroller*

IF WATER IS YOUR BUSINESS...

YOU CAN PICK THE

AMERICAN METER

THAT MEETS YOUR SPECIFIC NEEDS

Water Characteristics are not the same everywhere. Mineral and chemical contents vary. Their reaction on the measurement instruments that guard your profits can cause you trouble and expense.

That's why AMERICAN offers you the most complete design flexibility of any meter and lets you pick the elements that meet your specific needs.

Only AMERICAN Offers a Choice of:

- **Sealed or Standard Register Box**
- **3 Piece or 1 Piece Measuring Disc**
- **Oil-Enclosed or Chrome Shell Gear Train**
- **Reinforced or Thrust-Roller Disc Insert**
- **Bronze or Nickel Alloy Measuring Chamber**
- **Frost Bottom of Breakable Bronze or Galvanized Cast Iron**
- **3 Housing Styles — Frost-Bottom, Split Case or Solid Case Construction**

You select the elements to fit your needs — if you like, our engineers will help.

In addition, each AMERICAN water meter provides you with the basic built-in features of unmatched construction simplicity, unequalled measuring accuracy, uniform precisely machined parts and assemblies, and the widest range of interchangeability.

AMERICAN meters are designed to last longer, and save you money — when you buy 'em, when you run 'em and when you repair 'em. Why not try them and see for yourself.

For complete details write for Bulletin 58

BUFFALO METER COMPANY, INC.

Dept. AC, 2917 Main Street • Buffalo 14, N. Y.

Sales representatives throughout the nation

SUBSIDIARY of AMERICAN METER COMPANY

Non-dusting ND-25 unclogs sewer lines fast! It generates heat and agitation immediately when poured into manholes . . . begins to remove and loosen debris on contact. Colored red, ND-25 enables you to test its effectiveness by observing traces of the color in other areas of the sewer system. ND-25 saponifies and emulsifies greases and oils — digests roots, paper and other materials containing a high percentage of cellulose. Packed in convenient 50 lb. metal containers.

See the man from National Chemsearch for the best in municipal chemicals. He's a well-trained specialist backed by one of the finest research staffs in the industry. Write for free brochure on ND-25.

ND-25
SEWER
SOLVENT

NATIONAL CHEMSEARCH CORP.

2417 Commerce Street, Dallas, Texas
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THE SEWER SOLVENT WITH RESULTS YOU CAN SEE!

Welded wire mesh placed on off-street storm sewer openings prevents children from entering the sewer.

Bars across the entrance of a storm-water inlet have a minimum five-inch clearance from the gutter.

Child-Safe Storm-Water Inlets

For safety's sake, Lincoln, Neb., has placed protective bars over approximately 1,800 storm-sewer inlets and 38 open pipes of 15-inch-diameter or larger not located in the streets. The accidental drowning of a four-year-old boy in a 30-inch storm sewer sparked this safety program—one of the biggest in the city's history. All the corrected openings are in residential or other areas where children could be attracted to them; parents have been requested to notify the city if they discover a dangerous opening that has been missed. Inlets in the downtown business districts were not treated.

A two-man repair crew under the direction of Lyle Gieseker, superintendent of the paving-repair and sewer-maintenance department, worked about five months on the program. They drilled holes about 3½ inches deep into the sides of the concrete inlet openings and then grouted ¾-inch steel bars into the holes. The bars were installed so as to leave at least a five-inch clearance from the bottom of the opening to the first bar to allow entrance of most debris washed down the gutter. A tour of the city showed that openings were not being clogged—but citizens are asked to rake away the material should they see a clogged inlet.

The cost of the program came to approximately $6,500, or about $4 per opening. This includes material, labor, and engineering.

CARL L. FISHER
City Engineer
Lincoln, Neb.

How to Cure House-Sewer Complaints

Faulty installation causes the majority of failures in house sewers, and careless, improper workmanship results in faulty installation. This is the conclusion of the Building Research Advisory Board, determined during the course of an investigation for FHA as a result of numerous complaints which have been received by that agency.

The joint construction causes many more problems than the material of which the pipe is constructed. Failures occur more frequently at transition joints or special fittings at the ends of a line rather than at straight-run joints. Jointing methods which require careful field construction suffer to a much greater degree from careless or improper installation than the more recently developed mechanical or pre-formed jointing methods. Cement and oakum joints and plain cement-mortar joints often result in unsatisfactory performance in house-sewer construction. The tendency to crack or shrink, the possibility of poor workmanship and the incorrect composition of the mix cause the majority of joint failures.

Asbestos-cement, bituminized fiber, cast-iron, concrete and vitrified-clay pipe find acceptance for use as house-sewer materials providing the manufacturer's recommendations or limitations are strictly followed during construction. These five materials at present account for practically the entire market in house sewers. Plastic pipe and laminated-wall bituminized-fiber pipe, although included in the survey, are not recommended at this time due to the lack of experience records.

Although written for FHA, this report covers thoroughly the knotty problem of house services which all cities face in varying degrees. The recommendations include the type of inspection and permit forms necessary to reduce future problems of this type substantially.

Codes and Standards

Codes, standards, inspections and other facets of this problem are well covered in the report, entitled "Residential Building Sewers," by the Building Research Advisory Board. It is Publication No. 787 of the National Academy of Sciences—National Research Council and may be obtained from 2101 Constitution Ave., Washington, D. C., for $2 per copy. ◄◄

The DUNCAN V.I.P.*

...like having a POLICEMAN at every meter!

Twenty-four hour a day protection to collected revenue can only be achieved by a meter specifically engineered to handle this tough assignment. Spectacular results prove the Duncan V.I.P. will affect substantial savings in parts costs plus increased revenue through effective vandalism control.

TIME EXPIRED
V.I.P. EXCLUSIVE
Submerged mystic-lock* increases security to the coin compartment. Non-exposure virtually eliminates malicious lock area vandalism.
Trade Mark

*Vault Insured Protection against vandalism

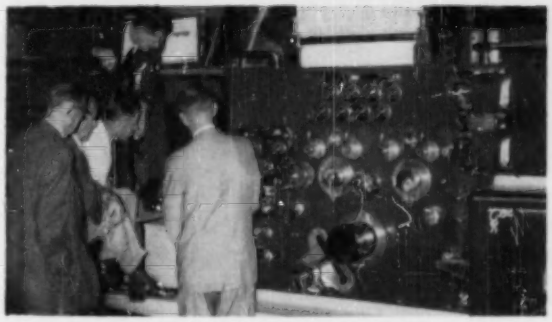
Check these outstanding protection features:

- TAMPER-PROOF BOLTED DOOR
- BURGLAR-RESISTIVE HOUSING
- PATENTED SEALED COIN BOX

DUNCAN PARKING METER

Division of Motor Products Corporation

835 NO. WOOD STREET CHICAGO 22, ILLINOIS



Fire chiefs study installation of the gas turbine engine (top photo); it uses one fourth the space needed for a six-cylinder engine of comparable horsepower.

Fire chiefs and visitors crowd around the Turbo-Chief at the Fire Academy in Rochester, N. Y. The low noise level and smoothness were impressive.

First Turbine-Powered Pumping Engine

Fire chiefs and city officials who attended the recent fire-department convention held in Rochester, N. Y., were given an opportunity to get acquainted with a turbine-engine-powered pumper built for the City of San Francisco, Calif., by American LaFrance of Elmira, N. Y. The Boeing 325-hp turbine engine is a hill climber—a must for San Francisco—much to the satisfaction of Chief William Murray.

The fire field deserves credit for this innovation. It is far ahead of truck developments, though GMC Chevrolet trucks and Ford and Chrysler cars may be turbine-equipped within two to five years. ◄◄

Alarms Simplified in Anderson

A Gamewell System recently installed in Anderson, S. C., combines direct telephone communication to and from Police Headquarters with the regular coded type fire alarm system. Fires are reported by the prompt, foolproof, and time-proved fire alarm telegraph.

Located in five key downtown areas, the new units permit conversation between Police Headquarters and the man on the beat. Installation was handled by our own crew who service the new system.

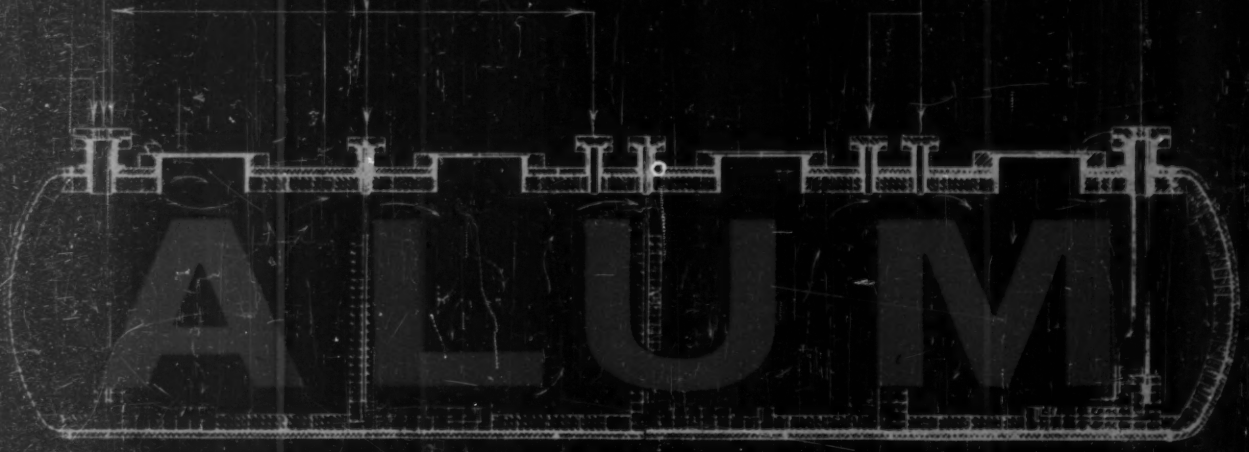
When an emergency phone is picked up, a signal light radio flashes at Police Headquarters indicating its location. The desk man picks up his phone to talk. When he wants to talk to a patrolman, he throws a switch to light a red light on the post above the particular phone.

The system is illustrated by the accompanying photograph showing both the emergency telephone box and the fire alarm box at its right, with the red signal light overhead. The alarm box is painted white with a red front. It and the pole to which it is fastened are made reflective with minute glass beads.

Our 12 schools have had auxiliary fire alarm boxes for 30 years. Sprinklers have been installed in our seven two-story school buildings and hooked directly into the Fire Department. All the schools have automatic fire horns whose purpose is to evacuate the buildings in case of fire.

CURTIS CAMPBELL
Fire Alarm Superintendent

Mr. Campbell, Jimmy Burdette, chairman of the fire committee, and Mayor John Pete Glynn at a Gamewell combination telephone-telegraph station in Anderson.



A new process based on [illegible]

This new process, developed and designed by Chemico, assures significant savings in the construction and operation of plants to produce liquid and solid ALUM. Using a horizontal autoclave for the pressure acid digestion of ore, normal three-day processing time is cut to three hours. In addition, the process can utilize a relatively coarse bauxite feed (plus 8 mesh), with further savings in equipment and operating costs. Efficient, compact package plants to produce as little as 3 tons per day of ALUM are available. Other single units to provide up to 120 tons per day can be provided.

ALUM plants now in operation can achieve considerable savings in process time and process costs by changing over to Chemico-designed autoclaves when present batch digestors need replacement.

The new Chemico ALUM process has the following advantages:

- **LOWER PLANT INVESTMENT COSTS**
- **UTILIZATION OF LOWER GRADE ORE**
- **PROCESS TIME CUT FROM 3 DAYS TO 3 HOURS**
- **30% LESS SPACE REQUIRED**
- **SMALL PACKAGE PLANTS AVAILABLE**

Direct all inquiries to CHEMICO, DEP'T "A", at the address below.

CHEMICO

CHEMICAL CONSTRUCTION CORPORATION
525 West 43rd Street, New York 36, New York

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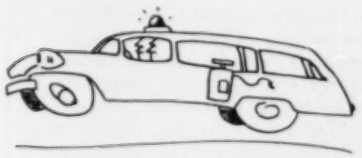
OUR MUNICIPAL NOTEBOOK

POLICE-FIREMEN

. . . in Dearborn, Mich., cover their beats in police-fire patrol cars. These are station wagons instead of the conventional passenger cars. Each car has a two-way radio, two fire extinguishers, boots, coats and fire helmets for each of the two-man crew. It also has gas masks, a stretcher and blankets, first-aid kits, and a hydrant wrench. The Dearborn police-firemen do not supplant



the fire department completely. Instead they permit manning of heavy equipment and stations by skeleton crews that move apparatus to fires where additional manpower will take over.

* * *

A SLUM-TOUR MAP

. . . that leads not only through depressed areas but also through areas where renewal activities have begun, is an excellent way to win support for urban renewal programs. The maps have proved their worth in Chicago, Denver, and Philadelphia. The maps should be accompanied by texts that help emphasize the significant points. They should list the public agencies involved so that the "tourist" can get further information if he wishes. They also should have sheets inviting comment that will be forwarded to the agency so that those who wish to express their opinion can do so.

* * *

OPERATION MUD JACK

. . . is the streamlined cure for swaybacked streets and sidewalks in Grosse Pointe Woods, Mich. Superintendent J. F. Hansen has organized two complete mud-jacking rigs that are self-contained, towed and carried by a single Dodge truck. Each truck has a 250-gallon water tank mounted on the forward end of the dump box. The truck also can carry a Koehring #1000 mud jack on a steel platform attached to the snow-plow hoist on the front of the truck. It also carries a Royer shredder, mounted on brackets on the back of the truck. The truck pulls a Jaeger ½-bag concrete mixer, and this in turn tows a Jaeger 75-inch air compressor and jack hammer.

* * *

DESIRABLE POPULATION DENSITIES

. . . set by the Detroit Metropolitan Area Regional Planning Commission in areas to be developed outside the urban core:

- *Urban residential areas,* 8,320 people per square mile on minimum lot sizes of 60 front feet.
- *Rural non-farm or open suburban areas,* 1,500 people per square mile with lot sizes of one-half acre or more.

* * *

DE-ICING SALT COSTS LESS

. . . in Coldwater, Mich., now that the city has an overhead storage tank to receive the salt in bulk. The same unit holds calcium chloride Peladow pellets, used for dust control in summer. An electric, motor-driven conveyor transfers the salt to the tank directly from the delivery truck. The change permitted a reduction of $8 per ton in the cost of salt and calcium chloride. This takes into account an allowance of $3 per ton for depreciation and maintenance. Last winter, City Engineer G. Collins reports, the city used 200 tons of salt and 190 tons of calcium chloride pellets.

* * *

PARKING METER INCOME

. . . in Holland, Mich., pays the salaries of two police patrolmen, parking-meter maintenance, parking-lot maintenance, snow removal and landscaping of off-street parking lots. This amounts to 30% of the gross. The remainder is earmarked to develop new off-street parking facilities.

If you want more information on these topics, or any other municipal problems, drop a note to

The Editors
THE AMERICAN CITY
470 Park Avenue South
New York 16, New York

INCINERATOR SAVINGS

. . . at Louisville, Ky., have been substantial. The plant earns nearly $100,000 a year from the sale of baled, salvaged metal. The incinerator also represents a savings of about $750,000 in capitalized sewage plant costs and annual savings of about $50,000 per year by drying the sewage sludge at the plant. The plant also earns $100,000 per year by charging $2 per ton to receive industrial and commercial refuse.

* * *

A MASTER TRAFFIC CONTROLLER

. . . governs traffic throughout all of downtown Chattanooga. The control mechanism adjusts to varying amounts of traffic, as well as directions. The system also has traffic counting stations that give a true indication of traffic flows at prescribed times. The equipment, furnished by Automatic Signals, has its master control in the basement of city hall and secondary controllers at each intersection.

* * *

TELEPHONE FIRE ALARMS

. . . located in the Los Angeles harbor area, and that are directly connected to the city's central alarms station have proved of great value, particularly in major emergencies.

The PhonAlarm boxes can tolerate one break in the wires and still operate. The public can use them to report all types of emergency calls. Though the central alarm station receives many false alarms caused by people, including children, who open the box and lift the receiver (thereby transmitting a coded signal), officials believe that many of these are caused by curiosity. False alarms of the type where someone removes the receiver and says that there is a fire where no fire exists are few. Moreover, the legitimate calls for police and ambulance have roughly equalled the legitimate fire alarms. ◄◄

26 New Cities of 100,000 Plus

About 50 million Americans live in the 128 cities of 100,000 inhabitants or more in the United States, according to a preliminary count of the returns of the 1960 Census of Population. The 128 cities had a combined population of 50 million, or 3.9 million more than their 1950 population. This overall gain was recorded despite declines in the population of 43 of the cities, including eight of the ten most populous. The rate of gain for the 128 cities was 8.4% in contrast to an increase of 21.5% in the number of persons living outside of cities of 100,000 or more. Part of the growth in these cities is due to annexations.

The number of cities of 100,000 or more in 1960 represents a gain of 21 over the cities of this size in 1950. Twenty-six cities were added to the list, whereas five cities dropped below 100,000 in 1960.

As in 1950, the South had the largest number of cities of 100,000 or more (42), followed by the North Central States (35), the Northeast (28), and the West (23). The South also had the greatest increase over 1950, with a net gain of ten cities of 100,000 or more. The North Central States and the West each had seven more than in 1950. The Northeast, on the other hand, had a loss of three.

California leads the states in the number of cities of 100,000 or more. The 13 cities of this size include five, Anaheim, Fresno, Glendale, San Jose, and Torrance, which were added to the list in 1960. Texas ranks second to California with 11 such cities, four of which, Amarillo, Beaumont, Lubbock, and Wichita Falls, reached 100,000 in the 1950-1960 decade. ◄◄

Chamber of Commerce Honors City Officials

In Asbury Park, N. J., Mayor T. F. Shebell, his councilmen, and City Manager Kendall H. Lee have achieved the distinction of being men with "honor in their own country." Recently the Asbury Park Area Chamber of Commerce presented each with a framed scroll and the city with a bronze plaque to be placed in the Council Room. The certificates and plaque recognize their accomplishments in behalf of the city.

This is the first time in the history of this Chamber of Commerce that such a presentation has been made to the municipal officials. ◄◄

Air Pollution Control News

Lung Diseases

Three medical doctors at the recent annual meeting of the National Tuberculosis Association, held in Los Angeles, singled out cigarette smoking and air pollution as two major causes of the increase in pulmonary diseases, including lung cancer. The doctors were Dr. Richard A. Prindle, Chief of the United States Public Health Service's air pollution medical program; Dr. John R. Goldsmith, air pollution researcher for the California State Department of Public Health; and Dr. H. Corwin Hinshaw, clinical professor of medicine at the University of California.

Spanish Translations

Arthur J. Benline, Commissioner of the New York City Department of Air Pollution Control, recently announced the publication of Spanish translations of three of the department's educational pamphlets. These are "Tips on Oil Burner Maintenance and Operating Procedure," "Tips on Incinerators" and "Tips for Tenants on Incinerators." Copies of the pamphlets may be obtained free of charge by writing to Publications, Department of Air Pollution Control, 15 Park Row, New York 38. The requests should specify Spanish or English version.

Ozone Research

The Armour Research Foundation of the Illinois Institute of Technology is developing an "ozone analyzer," to determine the extent of ozone in the atmosphere and the variations with the seasons. The instrument, which is designed to analyze the ozone layer in the stratosphere, is being developed for the Air Force Research Division, Geophysics Research Directorate. Recent studies by the Armour Research Foundation have shown that, in sensitive persons, concentrations as low as two parts ozone per million parts of air may cause severe lung irritation in less than an hour. The ozone affects the soft tissue of the respiratory tract. The longer the exposure or the higher the concentration, the greater the damage to the tissue.

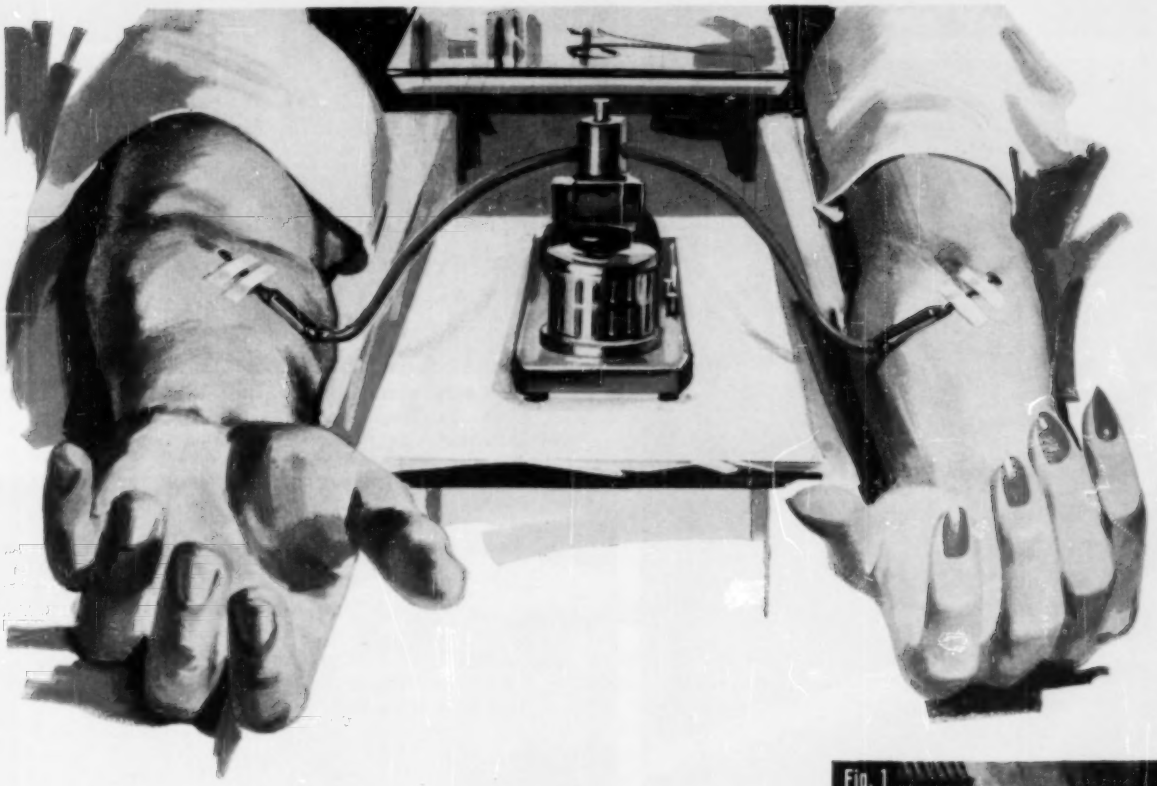
Long-Range Effects

"Tobacco weather fleck," causing an average of $1,000,000 worth of damage a year to the tobacco crop in southern Ontario (Canada), may be caused by the air pollution from industrial plants and motor vehicles in cities 60 to 100 miles away, according to Dr. H. B. Marshall, B. C. Newbury and W. A. Petrie, who have recently completed an appraisal of the damage. . . . At about the same time, the University of California Agricultural Extension Service in Contra Costa County issued a report which pointed out that air pollution in some form has been a problem in the country since 1905.

Fluorine Research Recommended

The Florida Air Pollution Control Commission has recommended a four-point program for research to determine the effects of airborne fluorine on citrus fruits. The commission recommended (1) a survey of citrus groves within the vicinity of phosphate plants, to determine the range and extent of contamination; (2) the development of research projects, relating to the fluorine problem and citrus fruits, by the State Health Board and the Citrus Experiment Station; (3) a specific research program, through the facilities of the Citrus Experiment Station, for the purpose of combatting or minimizing the effects of fluorine in groves located near phosphate plants ;and (4) a specific research program to correlate fluorine contamination with loss of production in groves in the affected areas, in order to expedite such control measures as may be needed.

—Prepared by Kenneth Kowald



When a lifeline is tapped...

Tapping lifelines under pressure has become a vital technique for sustaining life and growth, whether it be a human circulatory system or a community water supply.

The method of tapping Lock Joint Concrete Pressure Pipe has been developed to a high degree of ease and efficiency. Of the thousands of taps made in various designs and sizes of this pipe, all have been effected with absolutely no damage to the structure of the pipeline.

Whether the job calls for a cross connection for a 150″ aqueduct (fig. 1), a 42″ outlet in a 60″ transmission main (fig. 2), or a ¾″ service connection in a 20″ transmission main (fig. 3), Lock Joint Concrete Pressure Pipe may be tapped economically and with complete assurance.

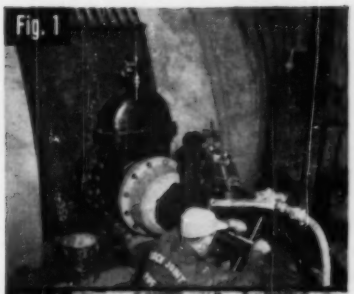


Fig. 1

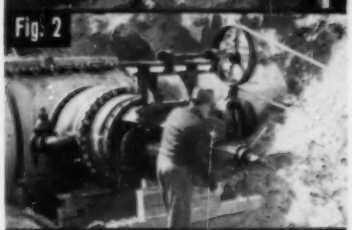


Fig. 2

Fig. 3

LOCK JOINT
CONCRETE PIPE

LOCK JOINT PIPE CO.

East Orange, New Jersey

Member of the AMERICAN CONCRETE PRESSURE PIPE ASSOCIATION

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Kan. • Perryman, Md. • St. Paul, Minn. • Winter Park, Fla.

Pressure • Water • Sewer • **REINFORCED CONCRETE PIPE** • Culvert • Subaqueous

Complete on-the-go control speeds up work with the big-capacity, 85-inch International hydraulic Bullgrader. Lift, lower, tilt, or angle in an instant . . . effortlessly, with fingertip ease.

Here's the only bottom-dump action available in any ¾-yd loader—the amazing International Drott T-340 Four-in-One—a clamshell, scraper, dozer, and standard bucket, *all in one!*

Adaptable! This T-340 with Bullgrader was crane-lowered to the bottom of an 8,000,000-gallon water reservoir, to clean a 20-year accumulation of silt from the drained reservoir.

Lick small job costs!

with T-340 stamina and 47 hp economy*

Here's go-anywhere traction at a budget price! . . . in a compact size that's easily transported between the host of small jobs that continually confront every public works official. A five-ton tilt-bed trailer pulled by a pick-up truck is all you need to take an International® T-340 or TD-340 from job to job quickly, at low cost.

At the job, you'll be surprised—and pleased—to see how much work a T-340 will turn out with 85-inch Bullgrader®, ¾-yd International Drott 4-in-1, 10-foot backhoe or other low-cost equipment ideally suited to the widest range of jobs. Exceptional power-to-weight ratio gives these sturdy crawlers the push and pull-power that would do credit to larger, more costly units. For loading and dozing you can get *five* reverse speeds with Fast-Reverser, each 22½ per cent *faster* than the corresponding forward speed. Planetary-type steering gives easy control with the steering levers alone.

Users call them "terrific!"—and the International Dealer near you will gladly show you *why* with an on-the-job T-340 or TD-340 demonstration. For new, illustrated catalog, write International Harvester Company, Dept. AC1, P.O. Box 7333, Chicago 80, Ill.

**Maximum engine hp at standard conditions*

INTERNATIONAL HARVESTER

One Sweeper, Two Crews

Using one big mechanical sweeper, Sanitary Superintendent James L. Dill can traverse the 100 miles of curbed streets in Temple, Tex., once a week during the daylight hours; then his night crew can cover the entire downtown streets and alleys each night. The sweeper is a Wayne three-yard unit with a main broom of palymar fiber. The brooms cost $28 each, of which $18 is material, and the remainder, labor. The city gets from 225 to 250 miles of service from each broom. ◄◄

Salt-Calcium Clears Icy Streets Faster

Actual field tests indicate that a mixture of salt and calcium chloride yields better results in snow and ice control than straight salt or a chloride with abrasives. These conclusions were drawn from a winter-long test by the New York Thruway Authority in conjunction with the Calcium Chloride Institute. The research program using the mixture of calcium chloride and rock salt was conducted on the 32-mile Weedsport Maintenance Section of the New York Thruway.

The results of the test program were then compared with those obtained from the use of rock salt and abrasives used on a ten-mile portion of the Syracuse Maintenance Section and a ten-mile portion of the Manchester Section.

The investigation showed that:

- **The chemical mixture (one part calcium chloride to two parts salt by volume) has a much faster melting action than straight salt and this becomes more pronounced in favor of the mixture as the temperature drops.**
- **The chemical mixture used with abrasives holds them to the pavement, preventing them from being swept off the pavement by wind and traffic much more effectively than straight salt.**
- **The chemical mixture eliminates glazing that often occurs when there is slush on the pavement during a sudden drop in temperature.**
- **The Weedsport program showed about 20% increase in spread per truck load of material over that obtained with straight salt due to less throw off and bounce.**
- **A mixture of two parts chemical mixture to one part abrasives proved satisfactory for most storm conditions.**
- **The mixture left no visible salt residue on the pavement.**

A pre-mixed stock pile can be prepared during fair weather for use during the early part of a storm. After a rain the stockpile developed a two-inch crust but this was readily broken during handling. However, spreaders cannot be kept standing loaded with the mixture for more than several hours in a warm garage without caking in the box. Trucks therefore were not preloaded. Immediately following a storm each truck, spreader, and spreader box was rinsed.

Calcium chloride caused shortening of the ignition by caking on the wires of the unprotected spreader and loading-equipment motors. This was corrected to some extent by covering the openings around the spreader motors and by washing the equipment with hot water after use.

Cost of the mixture used on the 32-mile test strip during the winter of 1958-1959 was $63,441, or about $4,200 more than the estimated cost of straight salt that would have been used. However, the additional spread per load through the use of the mixture saved about 2,200 miles of highway spreader operation and the loading of an additional estimated 530 tons of salt.

The test program has been extended for another season to gather additional data and cost information.

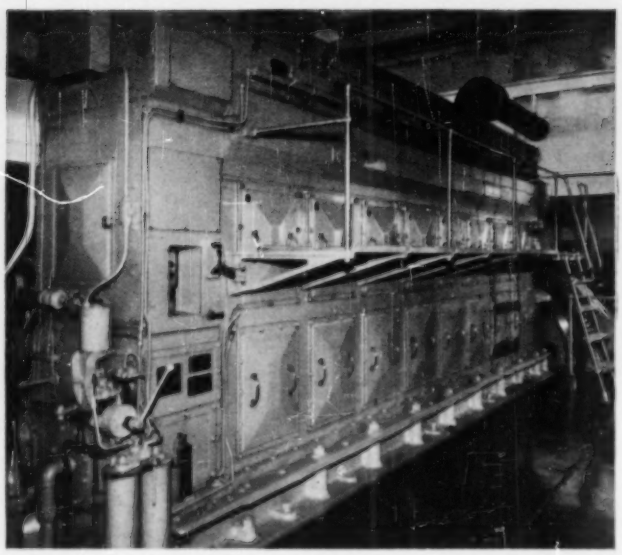
The test program is outlined in detail in Bulletin 252, Highway Research Board, National Academy of Sciences—National Research Council, 2101 Constitution Ave., Washington 25, D. C. ◄◄

Street Cleaning Schedules

Culver City, Calif., has inaugurated a new street-cleaning schedule. Residential streets will be swept every five days while commercial and industrial districts will be cleaned at least twice a week. Culver City is a little more than four square miles in area, approximately 75% of which is residential. The 76 miles of streets are swept by two motorized sweepers.

The new program has been set up on a district basis. The commercial and industrial districts are swept between the hours of 3:30 and 7:30 A.M., the hours when parking and traffic problems are less. The residential areas are swept between 7:30 A.M. and 12:30 P.M. with each district posted for "No Parking" during these hours on the day it is to be swept. Through the distribution of pamphlets and other public relations means, rather than by the signing, tagging of cars, etc., public cooperation has been achieved to make this program successful. ◄◄

over 15 KWH per gallon



** Superior 80-SX-8 Diesel at Princeton, Missouri, produces 15-25% more power per gallon fuel oil than comparable engine-generators!*

For the past three years, Consumers Public Service Company of Brookfield, Mo., has achieved remarkable fuel economy with a White Superior Model 80-SX-8 engine-generator package installed at Princeton. The Superior is rated 1440 HP at 360 RPM and drives a generator of 1000 KW capacity. This dependable combination produces over 15 KWH of electricity per gallon of fuel oil, which is 15-25% more power per gallon than comparable engine-generators commonly produce!

Superior's highly developed open chamber combustion system and a competitively-aimed series of exclusive design developments and refinements account for this thrifty performance. Moreover, the high KWH/gallon will remain consistent, because Superior is a rugged, heavy-duty, low-speed engine. It will not eventually "loosen up"—like lightweight, high-speed engines often do—causing a gradual drop in power output per gallon. Superior's economical operation goes far beyond fuel savings, too. Extreme design simplicity eliminates high mortality parts . . . means fewer replacement parts required, reducing maintenance and repair to a minimum.

Model 60 and 80 Stationary Diesels, six or eight cylinder, can be furnished as diesel, dual-fuel or gas engines. They are one segment of a complete line of Superior engines ranging from 190 to 2150 HP, or 150 to 1500 KW. White can custom-engineer a Superior to your exact requirements and apply its extensive experience with automatic, unattended and remote control operations to your problem!

Superior ENGINES · ATLAS Imperial DIESEL ENGINES · White DIESEL

White Diesel

WHITE DIESEL ENGINE DIVISION
THE WHITE MOTOR COMPANY
Plant and General Offices: Springfield, Ohio

Have You Problems?

These Free Booklets Will Help You

Check over these listings which will provide you with important up-to-date information on equipment and services that will assist you in solving municipal problems.

Write to address given or circle corresponding number on free post card on page 51.

Rotary Data Files

812 With this file system reference data move, workers don't; customer service speeds up, employee fatigue is lessened, floor space is freed. Many types and sizes of power and manual rotary files are in use in many fields. Let ACME VISIBLE RECORDS, INC., 8601 W. ALLVIEW DRIVE, CROZET, VA. tell you about them.

Getting the Paving Material You Ask For?

813 You can find out in just 10 minutes with a #111-70 motor driven Rotarex Separator, which accurately determines bitumen content and the gradation of aggregates in bitulithic paving materials. Literature from BICO, INC., 3116 VALHALLA DRIVE, BURBANK, CALIF., will give you the details.

Rubbish Collection Movie

814 A letter addressed to CITY TANK CORP., SALES DEPT., CULPEPER, VA., will arrange a showing of the Roto-Pac rubbish collection unit on both typical and unusual routes. You'll see it handling both manual and automatic loading of containers, learn about the benefits of its continuous loading and continuous compaction.

Tough, Flexible Traffic Marker

815 Here's a marker that takes traffic and weather abuse without losing its shape or color. It readily fastens to any road surface and is highly visible day and night. Let NATIONWIDE ENGINEERING CO., INC., 2535 MT. CARMEL AVE., GLENSIDE, PA., give you full facts on the Fixatron Model FM-2.

Report on A New Type of Sewage Purification

816 YEOMANS BROTHERS CO., 2009 N. RUBY ST., MELROSE PARK, ILL., has available for distribution copies of the Yeomans Guard, containing a report on the effectiveness of the Hi-Cone aerator oxygen absorption test, made at the Glendale Illinois Sewage Treatment Plant.

Brush Chipper News

817 Facts and features on all six new models of M&M brush chippers are presented in *Catalog* No. 657, which can be obtained from MITTS & MERRILL, 1003 S. WATER ST., SAGINAW, MICH.

Trenches Like the Devil

818 Digs wide, digs deep, digs fast (at speeds up to 1200 feet per hour), is self-propelled, features power boom control and reversible dirt conveyor and is said to cost less to buy, to operate, to maintain. Brochure gives facts and specifications on the Model L-12 Trench Devil. Write ARPS CORP., DEPT. AC, NEW HOLSTEIN, WIS.

Portable Centrifugal Pump

819 *Bulletin* WLP-160 gives full facts and complete specifications for the CMC 3" WONDER-Lite centrifugal pump, which weighs only 97 pounds yet is able to pump over 19,000 gallons per hour. Write CONSTRUCTION MACHINERY CO., WATERLOO, IA.

2 Cents Per Foot for Trench Digging

820 That's all it costs to dig trench with a Ditch Witch—and it's easy, too, whether trench size is 4 or 16 inches wide or as much as 6 feet in depth. Let descriptive literature tell you the full story; write CHARLES MACHINE WORKS, INC., 603 BIRCH ST., PERRY, OKLA.

400-Watt Mercury

821 It's the Joslyn "400" built-in-ballast mercury luminaire that has withstood wind velocities of 125 miles per hour. It weighs 22 pounds without ballast, 41 pounds with. Write JOSLYN MFG. AND SUPPLY CO., 155 N. WACKER DRIVE, CHICAGO 6, ILL., for *Bulletin* 12-116A.

Issues Incinerator Bulletin

822 All data useful to engineers and architects are included in new and comprehensive *Bulletin* No. 185, which pictures and describes the various types of incinerators made by MORSE BOULGER, INC., DEPT. 160, 80 FIFTH AVE., NEW YORK 11, N. Y.

Tree Care

823 Interesting information about trees and helpful, timely suggestions for the correct care of trees is to be found in the 4-page brochure "Tree Trails," which is published by THE DAVEY TREE EXPERT CO., KENT, OHIO.

Blast-Clean Your Water Meters

824 *Bulletin* 32-C reports on a method that will enable you to quickly and thoroughly clean water meters, pipe valves and fittings with complete safety. For a copy, write RUEMELIN MANUFACTURING CO., 3902 N. PALMER ST., MILWAUKEE 12, WIS.

Simplifies Lawn Care

825 A 3-gang mower that clips grass at the rate of 2¾ acres per hour and a new 42 inch rotary that follows ground contours, cuts within ⅝ inch of obstructions and doesn't scalp green areas are reviewed in literature offered by SIMPLICITY MFG. CO., 6155 SPRING ST., PORT WASHINGTON, WIS.

A Must for Water Works Men

826 Profusely illustrated *Catalog* 62 is a valuable source of information for all water works managers and consulting engineers. It gives the latest and complete information about equipment for setting and testing water meters. Write THE FORD METER BOX CO., INC., WABASH, IND.

A New Water Meter

827 . . . has been introduced by BADGER METER MFG. CO., 4545 W. BROWN DEER RD., MILWAUKEE 23, WIS. It's called the "Easy-Read" and combines disc meter accuracy and dependability with the efficiency of magnetic drive. Literature gives full facts on this new product for better water metering.

Cast Coupling Booklet

828 This 12-page booklet, published by SMITH-BLAIR, INC., 535 RAILROAD AVE., SOUTH SAN FRANCISCO, CALIF., describes and illustrates a complete line of cast couplings for all classes and sizes of cast iron or asbestos cement pipe. Special emphasis is given transition and reducing couplings used to connect pipe having variations in outside diameter.

Important Enough to Lock?

829 Then you'll want it locked securely. *Catalog* No. 71 will acquaint you with a complete line of super-security padlocks for virtually every "lock up" need. Write MASTER LOCK CO., MILWAUKEE, WIS.

212 Pages of Water Control Equipment

830 This new catalog presents the full-line of sluice gates and auxiliary water and sewage equipment manufactured by the RODNEY HUNT MACHINE CO., ORANGE, MASS., and includes engineering data and tables. It is available to qualified professional engineers; requests must be made on company letterhead.

Open Steel Bridge Flooring

831 A new catalog contains important engineering data on Greulich 4-way grid bridge flooring, which requires 20% fewer field welds, insures maximum lateral or horizontal rigidity and high skid resistance. Write KERRIGAN IRON WORKS CO., NASHVILLE, TENN.

Meter Repair, Testing Manual

832 Written to help the smaller water utility, this manual for water meter shops (1) tells what is needed to set up a planned meter repair program; (2) shows how to lay out a meter shop, and (3) gives step-by-step repair instructions for Trident split case meters. Write NEPTUNE METER CO., 50 W. 50TH ST., NEW YORK 20, N. Y.

Property Protection Guide

833 If protection of municipal property is your bailiwick, you'll profit by perusing this pocket-size protection manual being offered by DETEX WATCHCLOCK CORP., DEPT. A-12, 76 VARICK ST., NEW YORK 13, N. Y.

Keep Sewer Lines Flowing Freely

834 Regular use of Zep sewer aid will prevent blockage of your sewer lines by alkali-soluble obstructions. It is fast-acting, harmless to pipe, and easy to apply. For descriptive literature, write ZEP MFG. CORP., 1310 SEABOARD INDUSTRIAL BLVD., ATLANTA, GA.

New Giant Size Refuse Container

835 . . . handling unit gives the Dempster-Dinosaur new versatility, enabling it to serve as a complete system for both heavy materials handling and refuse collection and disposal. A brochure and film (available on a loan basis) describes the operation; write DEMPSTER BROTHERS, DEPT. DN-182, KNOXVILLE, TENN.

(See page 32 for more Bulletins)

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 51.

Police Motorcycles

836 A mobile police force is a more effective police force. Solo motorcycles get police to the scene of trouble quickly. Servi-Cars make possible greater patrol coverage of residential areas, can be used for parking and meter work and for traffic control. Ask HARLEY-DAVIDSON MOTOR CO., MILWAUKEE 1, WIS. for its folder on effective police mobility.

Vertical 2-Stage Split Case Centrifugals

837 Illustrated *Bulletin* 106-V fully describes and gives applications for the Type AJV line of pumps, recently announced by AURORA PUMP DIV., THE NEW YORK AIR BRAKE CO., AURORA, ILL. Capacities of these new vertical base mounted pumps range to 1400 gpm and heads to 425 feet.

Cities East and West Do It

838 Save maintenance money by steam-cleaning street equipment, garbage trucks, sewage plants, bridges, transit buses and animal shelters. And municipalities north and south do it—thaw hydrants, sewage lines, culverts and snow removal equipment with a MALSBARY MFG. CO., 845 92nd AVE., OAKLAND 3, CALIF., high pressure cleaning system.

Get the FACTS and...

You'll Get "FLEXIBLE"

Sewer Cleaning Equipment

If it's for cleaning sewers, "Flexible" makes it, from the smallest hand set to the heaviest power equipment. "Flexible" Sales Engineers spend 100% of their time working with Sewer Superintendents, analyzing their problems, and then training their crews after delivery.

A complete line of work-proven equipment, backed by the sound counsel of experienced "Flexible" Sales Engineers, gives your city maximum results for its sewer cleaning investment.

Get all the facts, without obligation. Write today!

RODDING MACHINES

SeweRodeR: Sectional rods, Positive Dog-and-Chain Drive, Safety Clutch, 4,000-lb. thrust, 3,000 ft. per day.

MonoRodeR: Continuous straight rod in lengths to 1,200 ft., Infinitely Variable Positive Drive Speed. Footage Counter and rotation Tachometer.

CoilRodeR: 1" dia. coiled rod for 4 to 8-in. lines; 1¼" dia. coiled rod for 4 to 12-in. lines.

Instant Reverse Power Drive: For small jobs and limited budgets.

BUCKET MACHINES

Truck-Loder: Loads right into truck, ends dumping sewage on street, eliminates shoveling and cleanup. Sets up from street level using Surface-Hung Manhole Rollers. Safety Belt Booster Clutch, Footage Meter, Instant Dual Speed Transmission.

FLEXIBLE INC.

415 SO. ZANGS BLVD., DALLAS, TEXAS
3786 DURANGO AVE., LOS ANGELES 34, CALIF.
1005 SPENCERVILLE ROAD, LIMA, OHIO

Hydraulic Valve Actuator

839 Suitable for use on virtually any type or size valve, this unit solves space and cost problems. Motor and pump run only when power is needed, reports *Bulletin* VA-10, and an automatic locking feature holds gate or plug in desired position almost indefinitely. Write OIL-DYNE, INC., 2115L W. MARQUETTE RD., CHICAGO 36, ILL.

Announces Fogging Applicator

840 A new, compact insecticide fog applicator for area control of mosquitoes and other insect pests has been introduced by THE SEEBURG CORP., 1500 N. DAYTON ST., CHICAGO 22, ILL. One man can install the See-Fog on a truck, Jeep, or trailer and control the fogging operation as he drives.

Floating a Bond Issue?

841 Desire help? Need a trustee or fiscal agent? Ask the man at Chase, i.e., the one at the CORPORATE TRUST DIV., THE CHASE MANHATTAN BANK, 40 WALL ST., NEW YORK 15, N. Y., and you'll get the skill, experience, and high level efficiency to properly assist you.

Insulated Water Meter Couplings

842 Latest literature from MUELLER CO., DECATUR, ILL., reports on "Zytel" 31, a new nylon insulator which protects services from house piping from electrolytic corrosion and reduces pipe deterioration.

Helps Compute Payrolls

843 The new J314 printing multiplier provides an economical method for handling repetitive figuring tasks such as inventory calculation and computing payrolls. It is one item in a complete new line of all-electric low-cost adding machines announced by BURROUGHS CORP., DETROIT 32, MICH.

'61 Ford Pickup Trucks

844 Loadspace on these rugged ½-ton Stylesides has been increased by as much as 16% and they've been designed to bring the user savings in initial cost, in operation and in maintenance. For full story, write FORD DIVISION, FORD MOTOR CO., P. O. BOX 658, DEARBORN, MICH.

Saves Over $1,700 on Fuel Bill in One Month

845 A Supairthermal Duafuel engine rated at 2,460 hp at 450 rpm has racked up this record for the Quakertown, Pa. municipal electric plant, where it is now producing 20% of the entire plant output. NORDBERG MFG. CO., MILWAUKEE 1, WIS. can supply you with complete details.

Valve and Fittings Catalog

846 A square bottom double-disc gate valve used to regulate flow of water in the discharge line of centrifugal pumps, or from a reservoir where there's unbalanced pressure against the gates, is but one product in full-line valve and fittings *Catalog* No. 52, available from M & H VALVE AND FITTINGS CO., ANNISTON, ALA.

School for Arson Investigators

847 The skills of fire and arson investigating can now be learned or brushed up on through a correspondence course being offered by the INVESTIGATIONS INSTITUTE, 53 W. JACKSON BLVD., CHICAGO 4, ILL. Literature gives full details.

Low-Cost Brush Disposal

848 . . . can be planned and it can be safe. The FITCHBURG ENGINEERING CORP., DEPT. AC-11, FITCHBURG, MASS., can give you the facts. It can also supply you with important articles on 5 methods of brush disposal and 10 new ways to utilize brush chips.

(See page 39 for more Bulletins)

NIGHT AND DAY

twenty-four hour service

PUMPS • WATER WELLS • WATER TREATMENT

Layne knows that an unfailing supply of water is vital, whether it be for municipal, industrial or agricultural use. With Associate Companies located throughout the world, Layne can provide the speed, the trained technicians and the quality parts to remedy your water problem. Over 75 years of experience accounts for the ever increasing list of customers who depend on Layne for service. For service night and day, call the Man From Layne.

Write for Layne Service Bulletin 100.

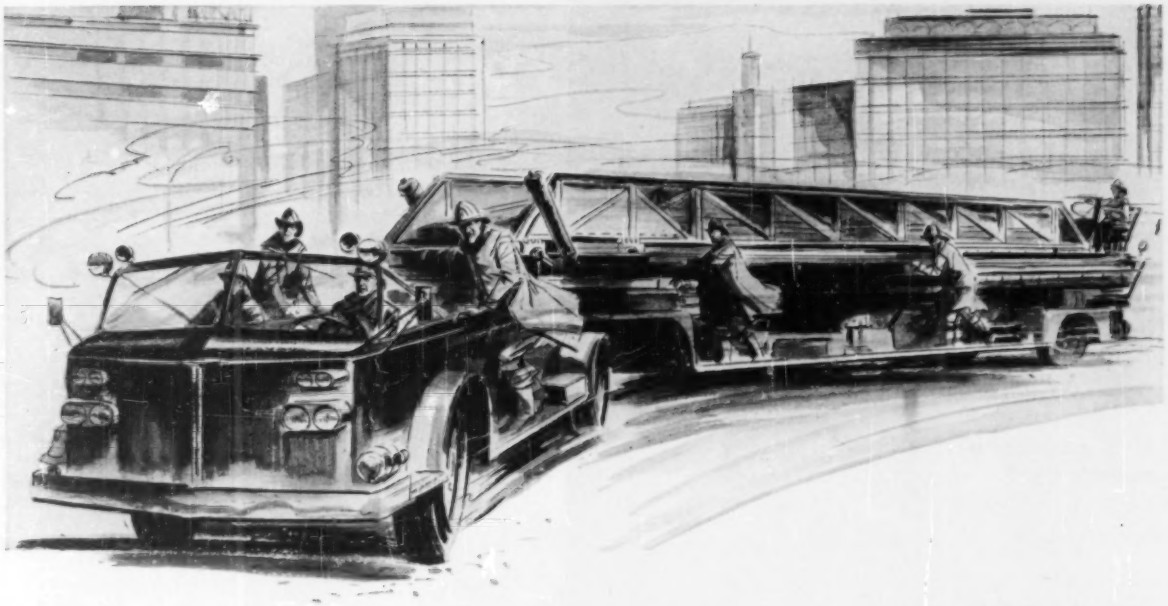
LAYNE OFFERS COMPLETE WATER SERVICE: Initial Surveys • explorations • recommendations, site selection • foundation and soil-sampling • well drilling well casing and screen • pump design, manufacture and installation • construction of water systems • maintenance and service • chemical treatment of water wells water treatment—all backed by Layne Research. Layne services do not replace, but coordinate with the services of consulting, plant and city engineers.

LAYNE & BOWLER, INC., MEMPHIS

General Offices and Factory, Memphis 8, Tenn.

LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD

SALES REPRESENTATIVES IN MAJOR CITIES



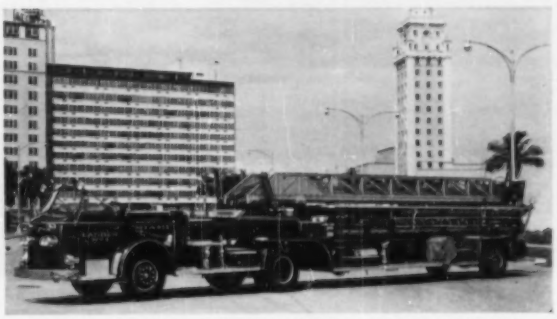
You can really "*Feed it the coal*" if it has A Spicer Turbo-Matic Transmission!

American LaFrance fire apparatus equipped with Spicer Model 183 Turbo-Matic Transmissions really take off and go when the fire alarm sounds.

Fast, smooth, uninterrupted acceleration is assured—regardless of load or terrain. And when a vehicle reaches cruising speed, the "183" shifts automatically into direct drive. Engine performance is at maximum efficiency every foot of the way from firehouse to fire—and greater operating economy results.

The Spicer Turbo-Matic makes for safer driving, too. Since no manual shifting is required, the driver is free to devote his full attention and energy to maneuvering his vehicle through traffic and over difficult road conditions.

Fire departments all over America are specifying



• Photo of American LaFrance aerial Truck, courtesy of Miami Fire Department

Model 183 Turbo-Matics on new equipment purchases. Get the complete story on their many advantages before you order *your* new equipment.

Write today for your free copy of this fact-filled, illustrated folder on the Model 183 Turbo-Matic Transmission, the key to maximum fire-fighting efficiency.

DANA Spicer

DANA CORPORATION

Toledo 1, Ohio

PROTECT TREE BEAUTY

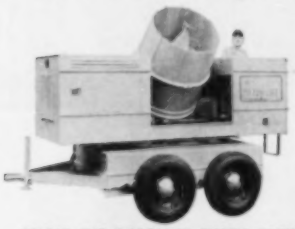
with John BEAN® ROTOMIST®

Trees represent a priceless investment in public beauty. That's why hundreds of communities protect their trees against harmful insects and disease by organized area-wide spray programs. The reasons are clear why Rotomist serves every municipality's needs so well:

THOROUGH COVERAGE — Rotomist delivers more cubic feet of air capacity with its exclusive straight-through air flow design. Spray reaches even the critical topmost branches for complete tree coverage necessary for effective elm disease control.

LOW SPRAYING COSTS — Rotomist's high rate-of-work capacity assures more trees covered per day. High pressure delivery breaks up spray into fine particle size. Result — all-over coverage with minimum use of materials. Rotomist saves tank refilling time, too, by using concentrates.

VERSATILITY THAT'S COMMUNITY WIDE — Taxpayer dollars go farther because Rotomist can be used for various community spraying needs including fly and mosquito control and leaf windrowing.



MODEL 301 Rotomist
Greatest rate-of-work capacity of any mist sprayer. Replaces as many as 6 men using high pressure spray guns.

SELECT THE ROTOMIST THAT'S RIGHT FOR YOUR NEED AND BUDGET

91 ROTOMIST	100 ROTOMIST	301 ROTOMIST
New standard for all-mechanical movement. Capacity nearly that of famous 100. Reach those tall street trees. All purpose uses*.	Standard of the industry. Reaches tops of tall trees even with prevailing winds. Up to 400 trees per tank, no splash on autos. A one-operator machine. Fine mist coverage, fast drying, good residual deposit.	Covers 50 to 100 per cent more trees per day. Get those off-street trees, more trees per tank. Wind not as much of a factor as in smaller sprayers.

*John Bean Rotomists are also all-purpose high pressure sprayers. Just attach hose and gun to high pressure pump outlet. Also available are models 50 and 51, specially designed for fly and mosquito control spraying.

SANITATION SPRAYING—Easy handling, plus complete horizontal and vertical control of air discharge makes the Rotomist ideal for fly and mosquito control.

LEAF WINDROWING — Rotomist drastically cuts costs of leaf removal by blowing leaves into windows for easier collection.

for special dutch elm disease and mosquito control data, plus free catalogs—check, clip and mail coupon attached to card or letterhead

John BEAN DIVISION OF FOOD MACHINERY AND CHEMICAL CORPORATION fmc
LANSING, MICHIGAN • ORLANDO, FLORIDA • SAN JOSE, CALIFORNIA

Send me:

- ☐ Rotomist Catalog
- ☐ Royal Sprayer Catalog
- ☐ Facts on Dutch Elm Disease
- ☐ Facts on Mosquito Control

If you did
jobs like these
LAST MONTH

LAND CLEARING

BULLDOZING

GRADING

or are doing
jobs like these
THIS MONTH

TRENCHING

PIPE LAYING

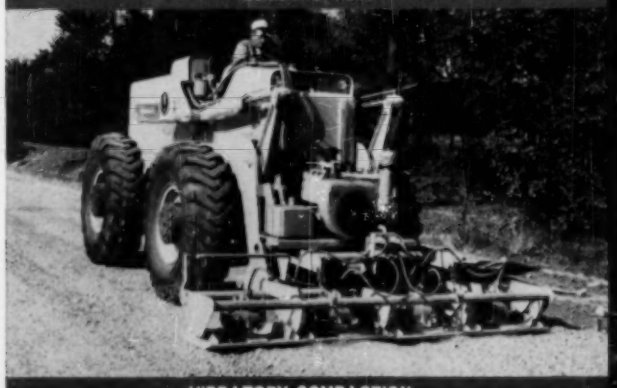
SHEEPSFOOT COMPACTION

PAYLOADER®

HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER and PAY are registered trademark names of The Frank G. Hough Co., Libertyville, Ill.

and will do jobs like these NEXT MONTH

BLACKTOPPING



VIBRATORY COMPACTION

POST HOLE DIGGING

you can do them ALL with a PAYLOADER®

A "PAYLOADER" cannot do *everything*, but it *can do more different kinds of jobs* than any other single piece of equipment you can own. Because of this multi-purpose usefulness a "PAYLOADER" can be profitable to you in many ways: it can save a heavy investment in special or single-purpose equipment; it can be used more hours and more days in the year; it can do a greater variety of jobs; it can handle different phases of the same job.

For example, you can buy a "PAYLOADER", and *only* a "PAYLOADER", with as many as three tools *in place* —a conventional bucket or a Drott 4-in-1 Bucket on the front, a Wain-Roy Backhoe on the rear, and a Superior Boom on the side—and use all of them at will, without any time lost for interchange or installation.

Vibratory Compactor, Blacktop Spreader and Hydraulic Earth Auger are three other EXCLUSIVE and profit-making pieces of allied equipment that can be quickly mounted on a "PAYLOADER" to do special jobs. For all public works departments that have snow-removal responsibilities there are also Rotary plows, "V" plows, Blade plows, and extra-large Snow buckets available for most "PAYLOADER" models.

Four-wheel-drive, rubber-tire "PAYLOADER" tractor-shovels are built in five sizes from 3,000 to 12,000 lb. operating capacity—and every model is the standard of comparison in its class. So, if you are looking for ways to ease the squeeze on both equipment and operating budgets you should get the "PAYLOADER" story from your nearby Hough Distributor. He is ready to help you select the model and attachments combination that best fits your needs. He also has the finest and most complete parts and service facilities in the tractor-shovel business—backed by factory service personnel—to keep your "PAYLOADER" investment profitable.

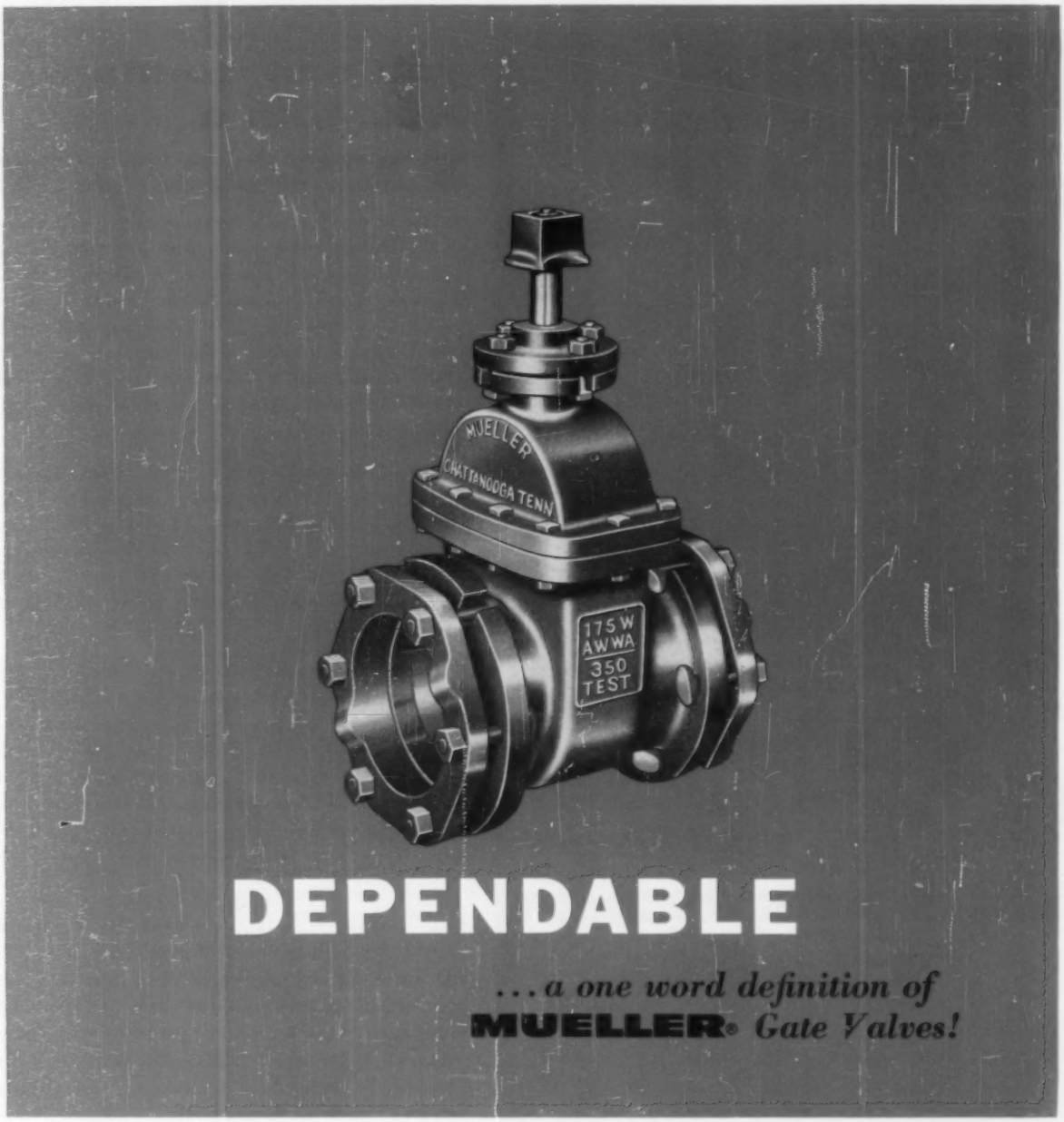
HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY · INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
710 Sunnyside Ave., Libertyville, Illinois
Send data on all PAYLOADER models and allied equipment.

Name _____
Title _____
Company _____
Street _____
City _____ State _____

1-B-4



DEPENDABLE

...a one word definition of
MUELLER® *Gate Valves!*

Mueller Gate Valves in your water supply or fire protection system is your assurance of years of maintenance-free service. This fact is due largely to a design-exclusive . . . Mueller's Four Point Wedging Mechanism that assures tight, sure, shut-offs. This unique principle exerts equal seating pressure at four points near the edge of each disc to eliminate deflection and distortion. Write for complete information on the variety of ends and wide range of sizes on these AWWA Gate Valves.

specify Mueller . . . there is no "equal"!

MUELLER CO. Since 1857 SERVING the Water and Gas Industries QUALITY 5584

MUELLER CO.
DECATUR, ILL.
Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited, Sarnia, Ontario

FREE catalogs

Write to address given or circle corresponding number on free post card on page 51.

Transistorized Pipe Detector

849 This new unit boasts a circuitry developed specifically for use with transistors. It is reliable in performance, even in varying temperatures. *File* No. AC-12 gives specifications and exclusive features. Write COMPUTER-MEASUREMENTS CO., UTILITIES INSTRUMENTS DIV., 12970 BRADLEY, SYLMAR, CALIF.

The 1961 Rambler

850 Whether you buy or lease your municipal vehicles you'll want to check on the Rambler, compare operating figures, maintenance costs, mileage per gallon, learn about its increased warranty. Write FLEET SALES DEPT., AMERICAN MOTORS CORP., 14250 PLYMOUTH RD., DETROIT 32, MICH.

Street Sweeper Fibres

851 A wide variety of domestic and imported fibers as well as tough, durable gutter wire for your power sweepers is available to fit your needs from the warehouse stock of A. STEIERT & SON, INC., HATFIELD, PA. Write for information.

Stumped by a Stump?

852 Then let descriptive literature from VERMEER MFG. CO., 1452 W. WASHINGTON, PELLA, IA., explain how a POW-R-STUMP CUTTER makes chips out of stumps in just minutes, even when working in close quarters.

Need a Good Sewer Cleaning Program?

853 You can get expert advice and a survey of your equipment needs by writing to CHAMPION CORP., HAMMOND, IND., which will also provide you with information on power bucket machines, pipeline scrapers, porcupine brushes, heavy-duty expanding sewer buckets and other accessories.

Mowing Problems?

854 Wondering how to select the right equipment to meet your varied requirements, yet stay within your manpower and equipment budget? INTERNATIONAL HARVESTER, CHICAGO, ILL. can show you how to get more mowing for your money.

Nonclog Submersibles Handle Large Solids

855 Typical applications of these pumps include storm water drainage, small sewage lift stations and general purpose sump drainage. Pumps come in 2-, 3- and 4-inch sizes. Details available from FAIRBANKS, MORSE & CO., 600 S. MICHIGAN AVE., CHICAGO 5, ILL.

Municipal Construction Castings

856 You'll find virtually every kind of construction casting in the new, fully illustrated 168-page catalog being offered by NEENAH FOUNDRY CO., NEENAH, WIS.

New Traffic Control Aid

857 The ET150 2-phase, full-actuated, volume-density controller balances "green time" at busy 2-street intersections for most efficient traffic flow. For full details and complete specifications, write EAGLE SIGNAL CO., MUNICIPAL DIV., DEPT. AC-1260, MOLINE, ILL.

Versatility

858 . . . is the prime characteristic of the "Payloader;" many jobs profitably and well done is the user's reward. Data on all "Payloader" models and allied equipment are available from THE FRANK G. HOUGH CO., 710 SUNNYSIDE AVE., LIBERTYVILLE, ILL.

Aluminum Swimming Pools

859 These pools are said to be economical to install, cost less to maintain, and are warranted against rust, cracks and leaks. CHESTER PRODUCTS INC., DEPT. C, BELLE AVE. AND B&O R.R., HAMILTON, OHIO, can give you the facts—and ask about Diavac filter systems.

Fire Equipment Catalog

860 If you specify fire fighting equipment or purchase it, you will find this new 128-page Fire Equipment Catalog of immense value. When requesting a copy, specify your title; write W. S. DARLEY & CO., CHICAGO 12, ILL.

Small Diesels

861 Literature from CONTINENTAL MACHINERY CORP., 19402 S. SUSANA RD., COMPTON, CALIF., reports these diesels to be dependable and versatile, able to do a big job. They're designed for general purpose applications or for portable and emergency equipment.

Mercury Lamps for High-Bay or Highways Installation

862 2½ times more light; 28% longer life; less maintenance; insured performance—just some of the performance features of Sylvania's ruggedized mercury lamps. For others, write SYLVANIA LIGHTING PRODUCTS, a division of SYLVANIA ELECTRIC PRODUCTS INC., DEPT. 63, 60 BOSTON ST., SALEM, MASS.

(See page 42 for more Bulletins)

WILCO REFUSE BURNER

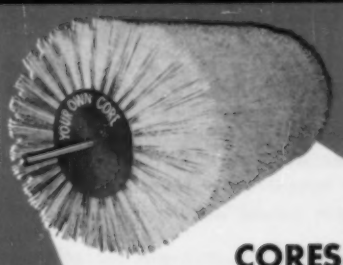
- Engineered Triple Draft assures fast, clean burning with maximum safety.
- Pre-fabricated in 10 sizes from 15 to 67½ ft. diameter to meet all municipal, community and industrial requirements.
- Big-panel construction makes erection fast and easy.
- Provides lowest-cost incineration per ton with batch loading or continuous feed. Truckloads at a time—no operator required.
- Efficiently burns all types of combustible waste, trash and garbage—no firebricks to maintain.

Hundreds of Wilco Refuse Burners are serving colleges, prisons, communities, municipalities and industry. Write, wire or call today for full information on the burner to meet your needs. Approved by fire underwriters.

wilco machine works, inc.

Phone WH 8-4555 Box 3897AC-3 Memphis 14, Tenn.

RADAX® PREFABRICATED BROOMS



NO CORES TO BUY

2 MINUTES TO INSTALL ON YOUR OWN CORE

WEARS FOR MONTHS

SWEEPS CLEAN

ASK FOR A DEMONSTRATION

PRICES DELIVERED TO YOUR SHOP

SWEEPER MAKE and MODEL	SR FILAMENT	TYNEX NYLON
MOBILE 54" BROOM	$195.85	$293.15
MOBILE 58" BROOM	$208.30	$310.60
WAYNE 450, 460, 520 and 550	$169.75	$252.50
ELGIN STREET KING	$258.20	$388.10
ELGIN WHITE WING	$258.20	$388.10
ELGIN 20, 30, and 81	$270.15	$399.95
AUSTIN-WESTERN 40	$208.15	$303.55
AUSTIN-WESTERN 60	$230.75	$333.20

RYNAL CORPORATION

114 ST. JOSEPH ST., ARCADIA, CALIFORNIA

FIRST NEW VOTING MACHINE IN 50 YEARS! . . .

PROVED - . . . by Both Voters and Election Officials!!

FIELD TEST — Ethel Calvert, 614 S. Elwood Ave., came out of the rain and voted twice at courthouse precinct No. 66 today. But it was all perfectly legal. She stamped "X's" on paper ballots — for real — in the regular polling place (welfare office), then walked into the hall and voted automatically — for fun — on a Seiscor Voting Machine. Seiscor machines, manufactured in Tulsa, are being given a trial run in the general election and might be used officially in the library bond issue election in late December.

(Tribune Staff Photo)

Tulsa Tribune November 8, 1960

VOTE MACHINE TRYOUT GIVEN FULL OK HERE

Tulsans Approve Speed and Accuracy of Seiscor Device

By CHUCK WHEAT
Of The World Staff

Tulsa voters overwhelmingly go for voting machines, a tabulation of impromptu ballots Saturday revealed.

Seiscor division of Seismograph Service Co., maker of the sleek new models tried out in Tuesday's

The Tulsa World November 13, 1960

Survey Shows New Machine Means *Fewer* Errors - *Easier* Voting - *Simpler* Operation

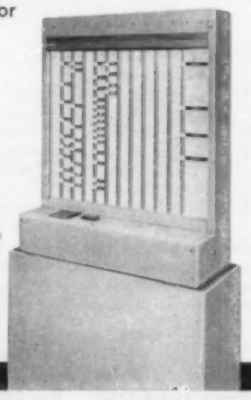
ALL AT *LESS COST* TO THE COUNTY!

The results of the November 8 field test of the new Seiscor Voting Machine are in — and Seiscor passed with flying colors!

A survey of voters and election officials showed more than 90% enthusiastically endorsed the Seiscor Voting Machine! The survey proved the Seiscor is faster, means fewer voter errors and is easier to vote than paper ballots.

Here's PROOF, obtained under actual election conditions, that the NEW Seiscor Voting Machine is the answer to your election problems.

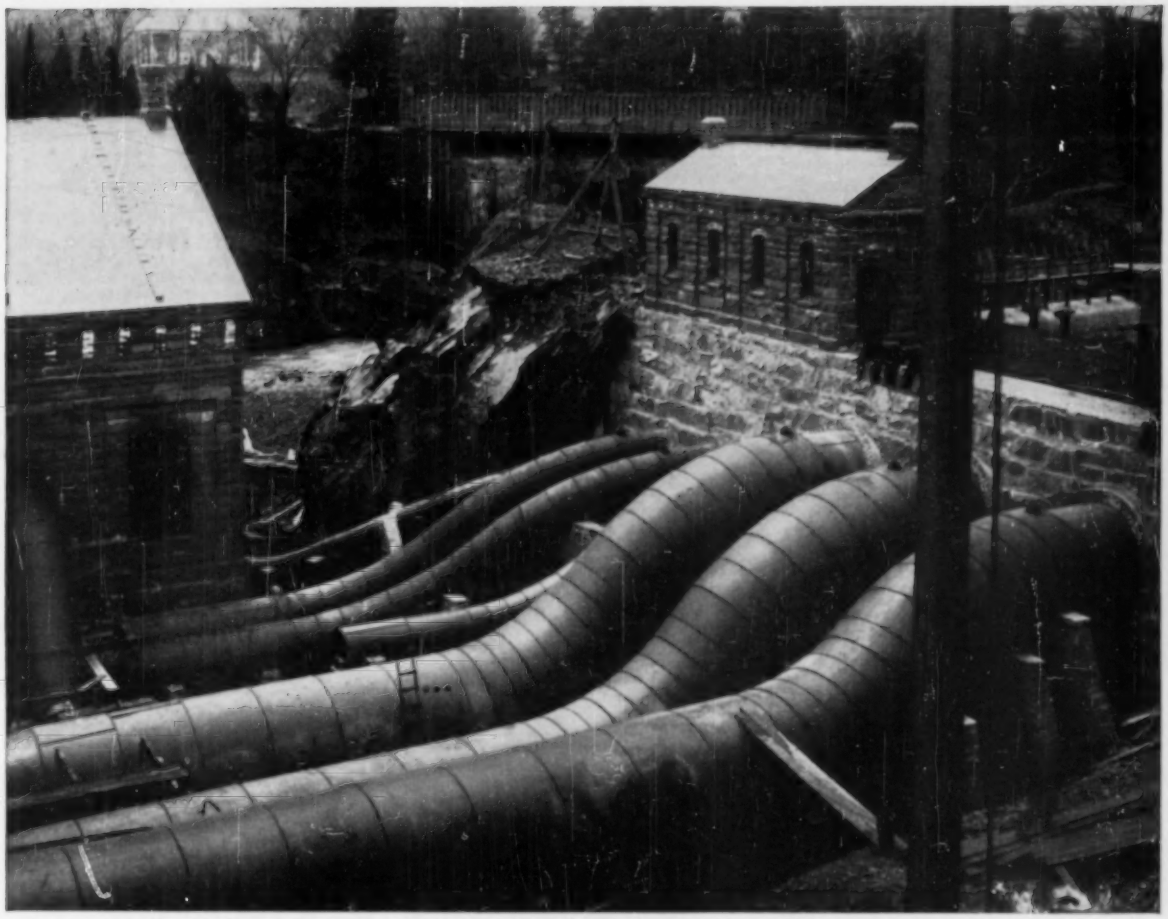
Remember, the Seiscor weighs less, costs less and is easier to prepare for voting than any other voting machine!



For Survey Report and additional information, write:

SEISCOR
A Division of
SEISMOGRAPH SERVICE CORPORATION
Box 1590, Tulsa, Oklahoma

SEISCOR



Steel pipe installed in 1899 is still on the job

In 1921 a washout completely undermined this thin-walled (¼-in.) 30-in. main in Paterson. It held! And it's still going strong today.

OVER sixty years ago, when a predecessor of the Passaic Valley Water Commission built a pumping station at Little Falls, New Jersey, they installed the riveted steel pipe shown above. It includes three 12-ft penstocks, and one 36-in., one 48-in., and two 66-in. supply mains.

In 1903 a filtration plant (the world's first large-size rapid sand filter system) was added. Since that time the major portion of the water supply for the communities of Paterson, Passaic, and Clifton has passed through these pipes. With time out for cleaning and re-lining two of the penstocks, the lines have been in constant service for over sixty years.

Beginning in 1894, over thirty miles of large-diameter steel mains have been installed in the area served by the Passaic Valley Water Commission, and all are in service today.

Isn't this persuasive evidence of the long service life of steel water mains?

For information about today's vastly improved steel pipe, please contact the Bethlehem sales office nearest you.

Steel *for Strength . . . Economy . . . Versatility*

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 51.

Increases Generator Output at Low Speeds

863 The improved Gen-O-Drive, can be used on automotive vehicles where excessive battery drain is a problem due to sustained low-speed driving or idling, or where electrical equipment, such as 2-way radios, demand excessive current. For detailed literature, write CONSOLIDATED GENERAL PRODUCTS, INC., HOUSTON 8, TEX.

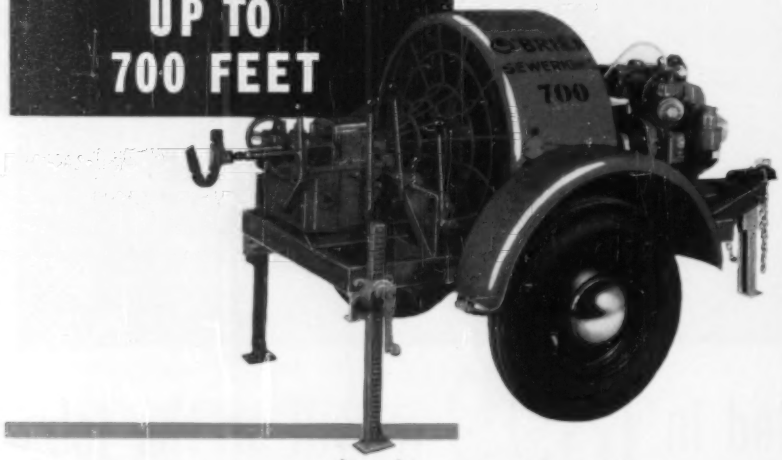
1961 Plymouth Pursuit

864 Municipal police will appreciate the characteristics of the 1961 Plymouth Pursuit Special 8. A solid performer, it's reliable, quick to respond, built to stand up under the rugged demands of police work. PLYMOUTH MOTORS, 6334 LYNCH RD., DETROIT, MICH. can give you the full facts.

Improved Permanent Patching Material

865 New literature from THE MONROE COMPANY, INC., 10703 QUEBEC AVE., CLEVELAND 6, OHIO, tells how ZOR-X repairs ruts and chuck holes instantly, regardless of weather conditions, and why it's particularly recommended for parking lots, roadways and highways, whether black top, concrete, brick or cinder.

CLEANS SEWERS UP TO 700 FEET



Big, husky O'Brien sewerking does the job ALL BY POWER!

•It's a fact—and we can prove it—sewer cleaning jobs can be done BETTER, FASTER, CHEAPER with the all-power SEWERKING. Yes—and costs can be reduced as much as 50-75%!

The basic reason is that *power* does all the work. Power drives the safety steel cable into the sewer. Power revolves the cable and cutting tools to cut away the stoppage Power pulls back the cable in the storage drum. All the operator does is handle the controls of the exclusive OB Power Transmission—the secret of handling long lengths of cable with power drive.

A COMPLETE SEWER CLEANING MACHINE —COSTS LESS TO OWN AND OPERATE

Nothing to add—nothing to take off—nothing on the street. A big machine, yet occupies only 20 square feet. Let us refer you to nearby cities which are cleaning sewers the up-to-date way—with the O'BRIEN SEWERKING.

Nationwide Sales and Service

O'BRIEN MANUFACTURING CORPORATION • CHICAGO 46 ILL.

Manufacturers of

O'Brien sewerking

FOR FREE CATALOG MAIL THIS COUPON

O'BRIEN MFG. CORP. 5632 Northwest Highway • Chicago 46

O.K. Send us the SEWERKING power Story. Dept. AC-161

City_____ State_____

Address_____

Attention of_____

Title_____ Dept._____

Predraining and Stabilizing Wet Soils

866 A new catalog with on-the-job photos describes Moretrench equipment and shows many types of projects where predrainage by Moretrench wellpoint systems has cut costs and helped solve construction problems for numerous municipalities. Write MORETRENCH CORP., ROCKAWAY, N. J.

A New Digester Tank Floating Cover

867 . . . reduces erection costs by as much as 50%, features design simplicity, structural stability and effective insulation. It is called Monodeck and is of the plate and pontoon type. *Bulletin* 6723 reviews it fully; write INFILCO, INC., TUCSON, ARIZ.

Just Roll It Along

868 . . . and this measuring wheel will record up to 100,000 feet automatically, keeping accumulated total in view, showing inches, fractions of an inch and tenths of a foot. Let ROLATAPE, INC., 1741 14TH ST., SANTA MONICA 2, CALIF., give you all the facts.

Improved Waterworks Products

869 EDDY VALVE CO., WATERFORD, N. Y., reports new designs of horizontal swing check valves available in sizes from 4 through 8 inches, the addition of a newly designed parallel seat gate valve, and an improved, streamlined fire hydrant. Write for literature.

Make Better Seals for Concrete Pipe

870 This informative manual on rubber gaskets for low head pressure pipe provides technical information and guidance on the selection and use of rubber gaskets on concrete pipe. For a copy, write PRESS-SEAL GASKET CORP., P. O. BOX 482, R. R. 6, COVINGTON RD., FORT WAYNE, IND.

Now that Winter's Here

871 It's particularly important to be up to date on what's up to date in ice and snow control. SOLVAY PROCESS DIV., ALLIED CHEMICAL, 61 BROADWAY, NEW YORK 6, N. Y., can brief you on ice control with calcium chloride salt mixtures.

Traffic Control Signs

872 A catalog of quality street name assemblies and embossed traffic control signs, designed for easy readability and long services, can be obtained from THE MIRO-FLEX CO., INC., 1824 E. SECOND, WICHITA 14, KANS.

A New Campaign

873 . . . to help municipalities combat at the local level public apathy about municipal water supply needs and/or the growing water shortage is announced by CAST IRON PIPE RESEARCH ASSN., THOS. P. WOLFE, MANAGING DIR., 3440 PRUDENTIAL PLAZA, CHICAGO 1, ILL.

Water Well Service Requirements

874 . . . can be met by HALLIBURTON CO., DUNCAN, OKLA. With 275 service camps across the country they are ready to do your cementing, fracturing and acidizing, provide hydrosonic redevelopment, formation testing, and supply tools and materials. Write for complete information.

Blast Clean Those Dirty Water Meters

875 Cincinnati, Milwaukee and towns in Florida, Georgia and New Jersey find the Vapor Blast Liquid Honing method of cleaning water meters to be thorough, noninjurious, time- and cost-saving. Write VAPOR BLAST MFG. CO., 3037 W. ATKINSON AVE., MILWAUKEE 9, WIS.

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 51.

Construction and Maintenance Heaters

876 Literature from the ADVERTISING DEPT., JOHN WOOD CO., HEATER & TANK DIV., CONSHOHOCKEN, PA., reports on two new models just added to the company's portable heater line. Both the PH 350 and PH 80 are designed for use in buildings under construction, concrete curing and drying, warming, thawing, drying of materials.

Protect Pipe

877 Brochures from HAMILTON KENT MFG. CO., 427 W. GRANT ST., KENT, OHIO, describe and illustrate the use of Tylox and Rexon gaskets and Rexon pipe coating, products designed to protect pipe projects from leakage and acid attack.

Plastic Pipe Filtering System

878 MARBON CHEMICAL DIV. OF BORG-WARNER, WASHINGTON, W. VA. reports that a rigid Cycolac ABS pipe filtering system is proving its toughness against corrosive odds at the salt water Marina Arena at Madeira Beach, Fla., where other pipe had failed. Details available on request.

2-Way Radio that Won't Drain Your Car Battery Dry

879 GENERAL ELECTRIC CO., COMMUNICATION PRODUCTS DEPT., SECTION, 1120, MOUNTAIN VIEW ROAD, LYNCHBURG, VA., says the battery drain by the TPL 2-way mobile radio is so low that you can leave the radio on while the car engine is off. For other advantages, write the company.

Speeds Overhead Utility Jobs

880 Hi-Ranger brings speed, safety, operating flexibility to overhead maintenance and measurably reduces costs. It is fully hydraulic in operation and enables a greater number of areas to be serviced in a given amount of time. Write MOBILE AERIAL TOWERS, INC., 1730 N. HARRISON ST., FORT WAYNE, IND.

Locates Pipe, Detects Leaks

881 The new Dualtronic Model LC-5T pipe locator-leak detector is a transistorized unit with greater versatility and sensitivity. It has been designed specifically for water utilities and municipalities, reports THE GOLDAK CO., INC., 1544 W. GLENOAKS BLVD., GLENDALE 1, CALIF.

Electro-Stat Photocopier

882 A compact, desk-top copier using an electrophotographic technique, is designed to handle every office copying requirement. It rents for less than $40 per month, or can be purchased for about $1,495. For details, write AMERICAN PHOTOCOPYING EQUIPMENT CO., 2100 W. DEMPSTER ST., EVANSTON, ILL.

New Composite Anode for Cathodic Protection

883 The PTC-Clad anode is a new form of anode for cathodic protection systems using impressed current. It can be used in place of more bulky and brittle conventional anode materials and makes economically and technically possible the use of platinum for anodes. For other advantages, write ELECTRO RUSTPROOFING CORP., 25 MAIN ST., BELLEVILLE, N. J.

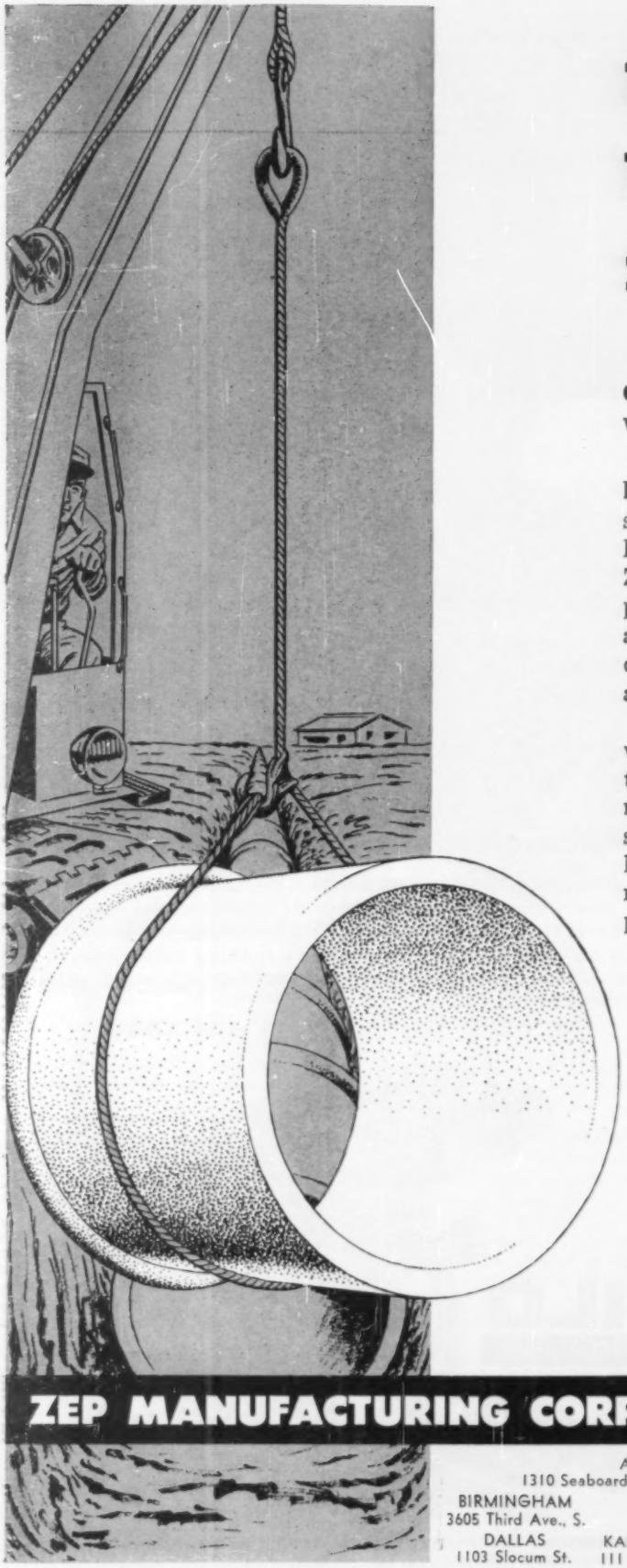
(See page 49 for more Bulletins)

ACCURATE, LIGHTWEIGHT, RUGGED ... the perfect combination for efficient, convenient engineering work on roads, bridges, construction and tunnels. IMPORTANT FEATURES include 24 or 28 power telescope, internal focusing, coincidence-reading tubular level, and telescope rotatable around its longitudinal axis for rapid checking of level adjustments.

WILD
HEERBRUGG

WILD N-2 ENGINEER'S LEVEL
One of a *complete* line of superb instruments for Surveying, Photogrammetry and Microscopy. *Write for Booklet N-2.*

WILD HEERBRUGG INSTRUMENTS, INC. • PORT WASHINGTON, NEW YORK
In Canada: Wild of Canada Ltd., 157 Maclaren St., Ottawa, Ontario



bury it, but don't forget it

Once sewer pipe is in the ground, you don't want to dig it up again.

The best way to avoid that expensive problem is to positively prevent blockage. A simple maintenance expedient will always keep your sewer lines open . . . regular use of ZEP SEWER AID. This powerful compound will quickly clear sewer lines of ANY alkali-soluble obstruction . . . accumulated debris, grease encrustations, industrial waste, and even tough tree roots.

In emergencies, fast acting Zep Sewer Aid will clear the line from end to end with little time and labor cost, and NO investment in mechanical equipment. It is harmless to the sewer pipe itself, even when used for prolonged periods. In fact, it's a good maintenance buy that solves your sewer clearing problems *when* or *before* they arrive.

Zep Maintenance Experts cover the country. If you want to talk to one, drop us a line, or just write for information and you'll have it by return mail.

FIRST
in Maintenance
and Sanitation

ZEP MANUFACTURING CORPORATION

ATLANTA
1310 Seaboard Industrial Blvd., N. W.

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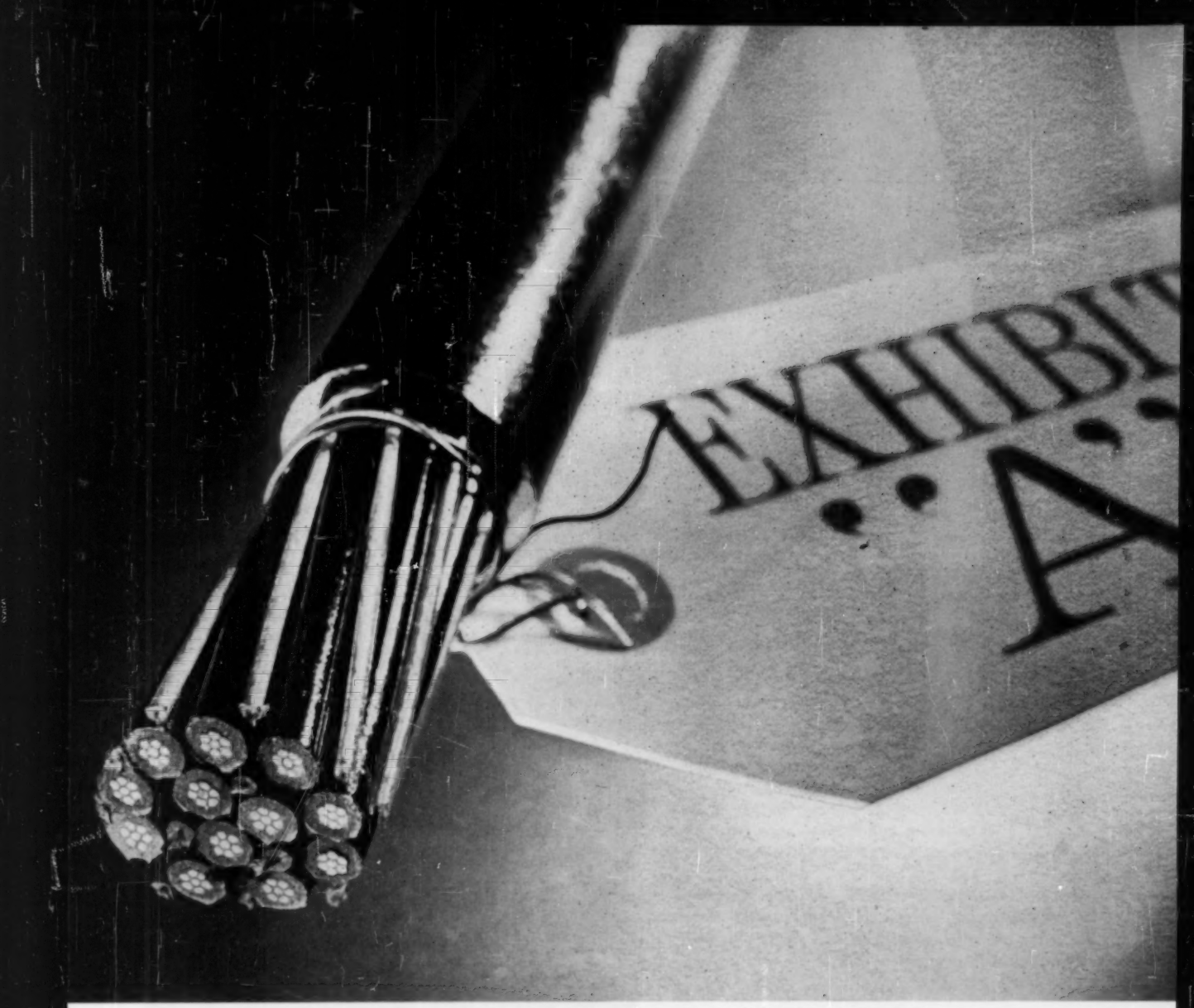
3605 Third Ave., S.

CLEVELAND
13112 Broadway

DALLAS
1103 Slocum St.

KANSAS CITY
111 E. 10th Av.

NEWARK
231 Johnson Ave.



Prevents blackmail in the substation

Every utility pays for a control cable *once*. It's a main artery in each power substation.

But when you pay for the same cable a second time, it's a crime as costly as extortion.

For example: at today's labor rates, installation costs increase surprisingly, if cable is difficult to handle. Eliminate this problem with Rome's thermoplastic control cable, which is cleaner and easier to handle, strip and splice. It has a high-gloss, low-friction surface and pulls through conduit and into control cabinets more easily.

Costly cable failure and repairs can far exceed your original investment. But Rome's thermoplastic jacketing resists moisture, grease, oil, abrasion and corrosives.

Protects your cable AND *your budget.*

And the *inside* insulation takes up where the jacketing leaves off, gives you added protection against water absorption, electro-osmosis, corona, ozone and other causes of cable breakdown.

There are many more facts in the case of the people vs. high cable costs. For more information, send for a copy of our "Guide to Representative Wire, Cable and Conduit." Use the coupon, or write on your letterhead.

ROME CABLE
DIVISION OF **ALCOA**

Dept. 23-11 • ROME, NEW YORK

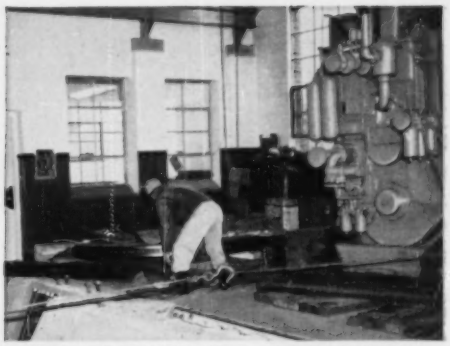
Please send me a copy of Bulletin RCP-100, "Guide to Representative Wire, Cable and Conduit."

Name.....

Title.....

Department.....

City..... *Zone*..... *State*.....



The Enterprise DGSQ Turbocharged Dual Fuel engine is moved into place as a unit. With 16" bore and 20" stroke, it is rated 1422 HP at a speed of only 360 RPM.

Fourth Enterprise Engine arrives at Belleville under protective wraps of all-weather tarpaulin. This new addition adds 1000 KW to plant's capacity.

Bright Power Picture at Belleville: Better Schools and Streets, with Lower Taxes!

"We recently installed the fourth Enterprise Engine in our 100% Enterprise Dual Fuel plant. Our excellent experience with this equipment over the past eight years has proved it to be our best buy in engines. Operating and maintenance costs have been consistently low, greatly reducing power costs and helping make Belleville one of the most thriving and progressive cities in the middle west. We have better schools and streets, lower taxes, above-average recreational facilities, and many other advantages enjoyed by only very few cities of similar size."

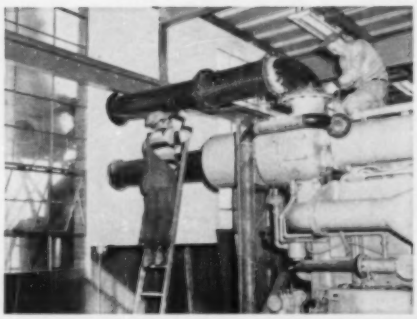
Earl E. Whitney, City Manager
Belleville, Kansas

City managers, municipal engineers, superintendents — all those concerned with the growth, the future, the prosperity of their community, can look to Enterprise Engines confident they will get this same kind of dependable and economical power-generating performance.

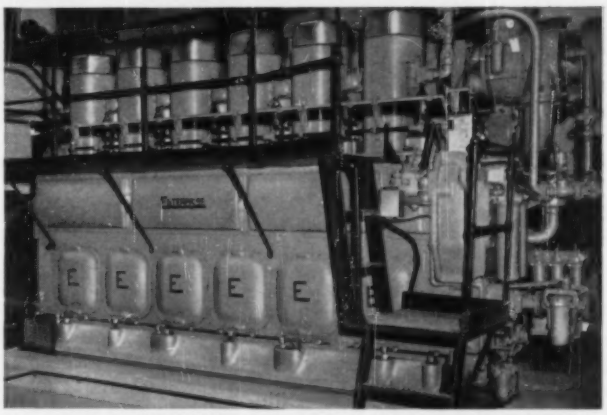
Enterprise Engines — Diesel, Dual Fuel, Spark Ignited Gas — serve every municipal need

The most modern engineering advances are reflected in every Enterprise model, from 73 to 6933 HP, for stationary or portable electric service, flood or water pumping systems, sewage plant power. See the Enterprise sales engineer in your area, or contact us direct for information or help with your plans.

Over a million horsepower at work the world over!



Installation nears completion as exhaust stack and muffler are installed. This "all Enterprise" plant, with its 2500 KW capacity, now has ample dependable reserve power for any emergency, future growth.



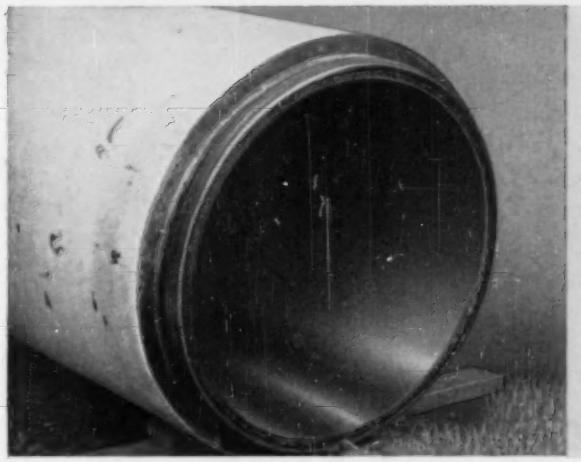
New member of the all Enterprise power team is cut in on the line. Low maintenance cost, excellent service record, and over-all economy of the Enterprise engines already in use were the big factors in its selection.

ENTERPRISE Diesels
THE DEPENDABLE

Enterprise Engine & Machinery Co., Subsidiary of General Metals Corporation
18th & Florida Streets, San Francisco 10, Calif. • National and worldwide sales and service.

In KNOXVILLE, TENNESSEE

TYLOX Rubber GASKETS, REXON Rubber GASKETS, and REXON PIPE COATING



PREVENT JOINT LEAKS, WHIP ACID ATTACK AND SPEED PIPE LAYING ON STORM-SANITARY SEWER PROJECT

Engineers and city officials went "Hamilton Kent" all the way, in the matter of selecting *leak-proof* pipe joints and *acid-resistant* pipe coating to protect Knoxville's new Riverfront-Willow Avenue sewerage and drainage project . . .

Heavy duty precision TYLOX Gaskets coupled the large diameter T & G concrete storm lines. REXON "K" Light Duty Gaskets jointed the smaller diameter B & S sewer lines, and tough, non-deteriorating REXON No. 2 Pipe Coating put a protective covering inside all lines that would serve nearby stockyards, butchering plants and other industrial installations.

In specifying Hamilton Kent TYLOX and REXON *rubber* Gaskets, and REXON Pipe Coating, engineers and city officials not only provided to the utmost for the safety and long life of the system, but made possible substantial savings in construction costs . . . Both TYLOX and REXON Gaskets are quickly assembled to pipe, and permit fast assembly of the line. Their flexible, *compression* seal compensates for pipe angularities, allows wet trench coupling, and immediate backfilling.

- **WRITE FOR BROCHURES** describing and illustrating use of Hamilton Kent TYLOX and REXON Gaskets and REXON Pipe Coating. Specify these products to protect **your** pipe projects from leakage and acid attack.

PROJECT: For City of Knoxville, Tenn., Riverfront-Willow Ave. storm and sanitary sewers.

ENGINEERS: H. R. Neal, City Engineer, and Roy I. Gentry, Service Director.

CONTRACTORS: Division A—Harrison Construction Company, Alcoa, Tenn. Division B—Blont Brothers Construction Company, Montgomery, Ala.

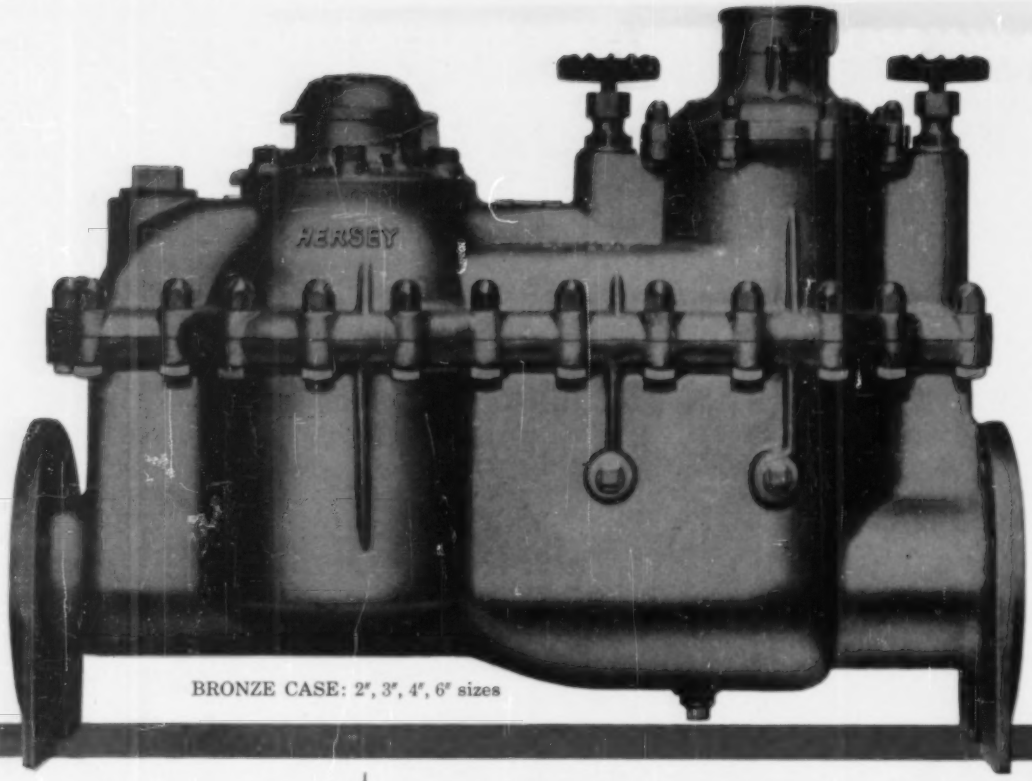
PIPE: T & G and B & S Concrete Pipe, manufactured by Sherman Concrete Pipe Company, Knoxville, Tenn.

3089

HAMILTON KENT MANUFACTURING COMPANY

KENT, OHIO

427 West Grant Street **Orchard 3-9555**



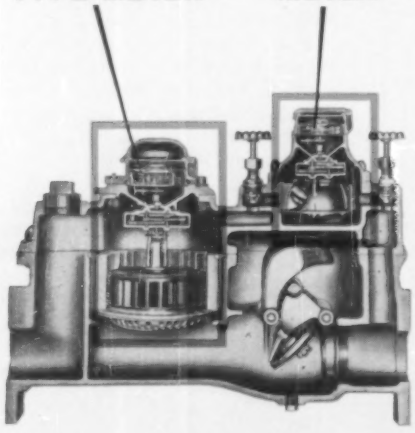
BRONZE CASE: 2", 3", 4", 6" sizes

The Proved Method of Accurately Measuring a Wide Range of Flows

HERSEY
COMPOUND METER
MODEL CT (BRONZE CASE)

For Large Rates of Flow
CURRENT TYPE METER

For Small Rates of Flow
DISC TYPE METER



Since 1932 this water meter has been the leader for measuring a wide range of flows. It combines a Current Type Meter (Model T) to measure high rates of flow with a Disc Type Meter (Model HD) to measure low rates of flow. A Hersey Automatic Lever Valve links these meters together, providing an integral device in one casing that accurately measures a larger range of flows than can be accomplished by either type of meter separately. The Automatic Valve is of the compound lever mechanical type which, when opened by a large demand, offers minimum resistance to the flow of water.

The Hersey Compound Meter, Model CT, combines accurate measurement at all rates of flow with a long-time, proved record of minimum maintenance requirements. An exclusive feature is the valves which make it possible to shut off the by-pass meter without closing down the main line meter. Write for more information.

Hersey-Sparling
Meter Company
HERSEY PRODUCTS
DEDHAM, MASSACHUSETTS

Branches: Atlanta, Boston, Chicago, Cleveland, Dallas, Denver, Kansas City, Mo., Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle.

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 51.

Thermoplastic Control Cable

884 Control cable is a main artery of every power substation. This cable resists moisture, grease, abrasion and corrosives, pulls through conduits and into control cabinets easily. *Bulletin* RCP-100 gives details on it and other wire and cable. Write ROME CABLE DIV. OF ALCOA, DEPT. 23-11, ROME, N. Y.

Protect Fire Service Lines

885 Now you can detect leakage or use of water from services which are intended to be exclusively for fire protection needs. Let HERSEY-SPARLING METER CO., DEDHAM, MASS., tell you all about the Detector Check, available in sizes from 3" to 10".

Versatile Leaf Loader

886 Over 500 cities save time, money and labor by using this vacuum unit to pick up leaves, to ventilate sewers, to spray and dust for pest control and to perform other miscellaneous work. A 4-page bulletin gives full details. Write THE GLEDHILL ROAD MACHINERY CO., GALION, OHIO.

Steel Water Pipe

887 Over the years since large-diameter steel pipe was first introduced for use as a water carrier it has undergone consistent improvement. BETHLEHEM STEEL CO., BETHLEHEM, PA., can bring you up to date on today's vastly improved steel pipe and tell you its meaning in terms of service, strength, economy, versatility.

Here's an Incinerator Stoker

888 . . . that's nonclogging, can't be damaged by clinkers catching between its links. It can be built up to 24 feet in width, features automatic feed and continuous discharge, and is available in chain-grate or bar-key models. ILLINOIS STOKER CO., DEPT., AC-120, ALTON, ILL. will provide full facts.

Makes Road Striping Easier

889 A new automatic spray gun for use on highway and industrial marking equipment is diaphragm-operated and requires about 25% less air to operate at peak efficiency. For details write KELLY-CRESWELL CO., XENIA, OHIO.

Improved Valve Box Locator

890 AQUA SURVEY & INSTRUMENT CO., 7041A VINE ST., CINCINNATI 16, OHIO, reports lower service costs and faster location of valve boxes with the improved Aqua locator. Free 15-day trial available.

Controls Aquatic Vegetation

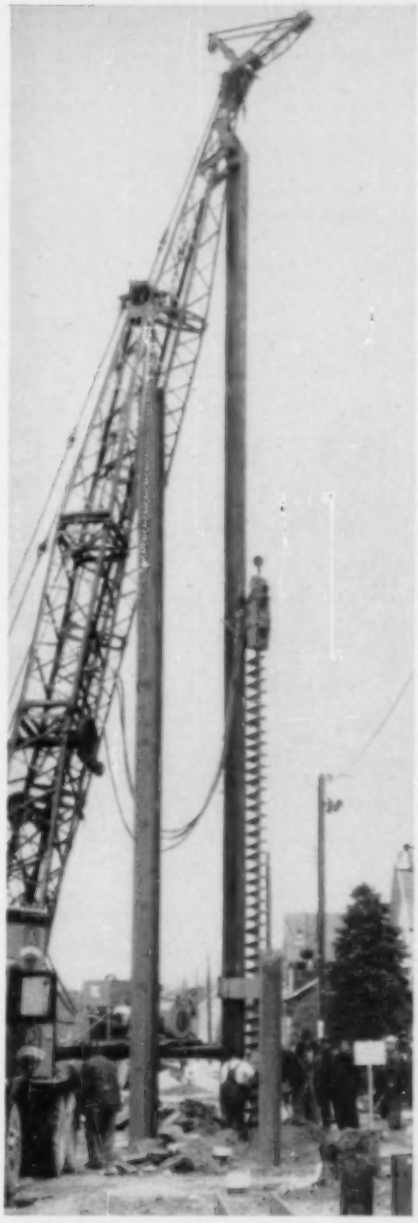
891 Chemical control of aquatic weeds through use of Chem Pels 2,4-D is the subject of a booklet published by CHEMICAL INSECTICIDE CORP., 30 WHITMAN AVE., METUCHEN, N. J. Types of weeds are illustrated and the herbicide, its method and time of application and cost of treatment discussed.

Powerized Sewer Cleaning Equipment

892 A complete line of sewer cleaning equipment geared for economy, efficiency and convenience of operation includes a power rodder, bucket machine and dumper, cable machines, rodding equipment and accessories. Write for literature to O'BRIEN MFG. CORP., DEPT. AC1260, 5632 NORTHWEST HWY., CHICAGO 46, ILL.

(See page 50 for more Bulletins)

"Quiet" Pile Driving Method Speeds New York Sewer Job



Ka-Mo H140 Hydraulic Boring Unit saves contractor money and complaints from job site homeowners

T&T Contracting Company, Brooklyn, recently had to sink some 2,500 H-Pile soldier beams to support sandy subsoil along the route of their 12,000-ft. twin tunnel sewer contract. Most of the line runs through the front yards of private residences.

Knowing that damage claims of cracked plaster, broken windows, leaky foundations, and smashed house stub would run high if they drove the piles, T&T decided to pre-bore holes for the 48-ft. beams. And they brought in a Ka-Mo H140 Hydraulic Boring Unit to do the work. Result:

14 to 16 "Noiseless" piles placed a day

Damage claims cut to the barest minimum

Complete recovery and reuse of steel — piles were like new after removal

WHATEVER THE BORING PROBLEM . . . ANGULAR . . . VERTICAL . . . HORIZONTAL . . .

the Ka-Mo H140 Hydraulic Boring Unit has the power and speed to make short work of drilling in toughest ground. Bores holes from 3" to 36" diameter.

Send for your free copy of the new Ka-Mo Bulletin giving complete details or ask your Ka-Mo man to call today!

KWIK-MIX COMPANY
Ka-Mo Tools Dept.
Port Washington, Wisconsin

A Division of KOEHRING *Company*

Please send me free Ka-Mo Engineering Catalog

Name .....

Company .....

Address .....

City ..... State .....

KAM101AMC

POKER?
Play to win!

How would you play these hands?

In coming months we'll discuss how most "experts" (steady winners) would play the above hands in draw poker, jacks or better to open, 6 or 7 players in the game.

Every hand involves some basic principle of good poker playing. Simple rules, but ones which are most often violated by most good losers. Of course, following the rules is no guarantee you'll win. But, you should win more often.

Ford is not recommending that you gamble. But if you do play poker for money, chalk or marbles... or for that matter, just for the fun of it, you'll probably enjoy the game even more when winning.

In the same series, we'll be telling you of another way to win with Ford, and with no gamble at all: simply by using Ford tractors and equipment to help solve the problems of your job.

Next month, for instance, we'll announce a cash-money offer which so far as we know has never before been made in this field. Watch for it. It could be worth more to you... well, maybe more... than a royal flush!

Tractor and Implement Div., Ford Motor Company, Birmingham, Michigan

Ford
TRACTORS
EQUIPMENT

Your City Can Improve Services and Reduce Costs

...by taking advantage of the improved municipal equipment offered below.

Write to address given or circle corresponding number on free post card on page 51.

For Better Reflectorized Signs

893 The booklet "Reflectorized Glass Bead Products," available from FLEX-O-LITE MFG. CORP., 8301 FLEX-O-LITE DRIVE, ST. LOUIS 23, MO., contains tests and specification data, application procedures, and other helpful information that will help you achieve better reflectorized signs for less.

The Way to Low Cost Pipe Installation

894 Reading this booklet from HYDRAUGER CORP., LTD., 681 MARKET ST., SAN FRANCISCO 5, CALIF., just might save you as much as 90% in pipe installation costs. It discusses an effective earth boring tool and shows relative costs and speeds of boring with it.

Traffic Hazard Marking Kit

895 All ingredients necessary to satisfactorily reflectorize and sharply delineate traffic hazards are included in this kit. *Catalog* V-160 gives full facts, also details V-S-R, a reflectorized marking material for vertical surfaces. Write CATAPHOTE CORP., TOLEDO 10, OHIO.

Just Push It Along

896 Tough, balanced and easy to push, these Tarco can carriers prove themselves to be a "street sweeper's friend." Literature from TARRANT MFG. CO., 23 JUMEL PLACE, SARATOGA SPRINGS, N. Y. will give you complete information.

Bulletin 20-14

897 . . . gives full facts about magnetic flow meters which measure water, sewage sludge and other treatment plant flows, have an accuracy of ± 1%, and no flow restrictions of any type. Write THE FOXBORO CO., 9512 NEPONSIT AVE., FOXBORO, MASS.

Street Lighting Standards

898 Five attractively designed- up-to-date styles of outdoor lighting standards, as well as new developments in fluorescent-type standards, are described in *Booklet* OTA, currently available from MILLERBERND MFG. CO., WINSTED, MINN.

Illustrated Bucket Booklet

899 This bulletin not only illustrates but also gives full details, including weights and dimensions, on a complete line of orange peel buckets for every digging and handling need. Dwarf and catch-basin buckets are included, too. Write THE HAYWARD CO., 50 CHURCH ST., DEPT. A, NEW YORK 7, N. Y.

Brush Disposal Truck

900 An integrated truck and chipper unit is providing an economical answer to the problem of brush disposal for many communities. It is also being used successfully in tree maintenance operations. Let ASPLUNDH CHIPPER CO., 501 YORK ROAD, JENKINTOWN, PA., send you complete information and specifications.

Assures Power Without Interruption

901 *Bulletin* P-2 describes the operation of two complete packaged systems that provide absolute continuity of electric power and reproduces oscillographic recordings of performance under various conditions of power interruptions. Write POWER EQUIPMENT DIV., CONSOLIDATED ELECTRIC CORP., STAMFORD, CONN.

Municipal Engines

902 . . . is the title of *Bulletin* SA-631, published by CLIMAX ENGINE MFG. CO., DIV. OF WAUKESHA MOTOR CO., CLINTON, IA. It reviews a line of rugged engines designed to provide low-cost power for water and sewage treatment plants, to give quick acceleration, and to perform longer with less maintenance.

Announces Automatic Asphalt Plant

903 The new self-contained 3140 Roadmaster asphalt plant has an output of 30-40 tons of hot mix per hour and up to 50 tons of cold mix per hour. It's designed to save manpower both on the job and between jobs. Write WYLIE MFG. CO., INC., P. O. BOX 7086, OKLAHOMA CITY, OKLA.

Traffic Control Signs

904 Current catalog literature from GRIMM STAMP & BADGE CO., 8105 ROSALIE, ST. LOUIS 17, MO., will put you in touch with a long-lasting attractive line of die-embossed on zinc coated steel traffic control signs—200 wordings in stock.

Durable Drainage Structures

905 Complete data, including sizes, gages and shapes, on a complete family of service-proved drainage products can be obtained from ARMCO DRAINAGE & METAL PRODUCTS, INC., DEPT. A, 7400 CURTIS ST., MIDDLETOWN, OHIO. Request *Catalogs* CMS-7458 and CMS-5858.

Precast Concrete as a Decorative Material

906 AMERICAN-MARIETTA CO., CONCRETE PRODUCTS DIV., 101 E. ONTARIO ST., CHICAGO 11, ILL., has prepared a colorful brochure showing the economies, attractiveness and versatility of concrete wall panels and allied components of precast concrete.

New Concept in Ball Valve Design

907 HENRY PRATT CO., 319 W. VAN BUREN ST., CHICAGO 7, ILL., reports that its new ball valve, which utilizes a fully adjustable rubber seat, is completely bubbletight at all pressures up to rated 250 psi. Sizes, operation, and other important features are described in *Bulletin* BA-1.H.P.

Detects Lighter and Heavier-Than-Air Gases

908 A new safety device, the Detectogas Air Density Monitor, guards against disastrous gas explosions by utilizing a mechanical balance principle to provide power-free, attendant-free operation around the clock. DETECTOGAS INSTRUMENTS, INC. OF HOUSTON, TEX., will provide detailed literature.

Office Copying Machine Pamphlet

909 The revised edition of "How Modern Office Copying Adds Time Where It Counts" contains case histories of Verifax Copier machines, applications, operation and versatility. It will be of interest to any one concerned with office copying equipment and applications. Write EASTMAN KODAK CO., BUSINESS METHODS DIV., ROCHESTER 4, N. Y.

(See page 58 for more Bulletins)

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD

FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE

470 PARK AVENUE SOUTH

NEW YORK 16, N. Y.

FEELING OUT-OF-DATE?

If you need information on any type of municipal service or equipment mentioned or advertised in this issue, these reply cards will get action in a hurry.

TO THE AMERICAN CITY's Catalog Supply Department:

Please send me literature on items numbered as follows, starting on page 31

812	824	836	848	860	872	884	896	908	920	932
813	825	837	849	861	873	885	897	909	921	933
814	826	838	850	862	874	886	898	910	922	934
815	827	839	851	863	875	887	899	911	923	935
816	828	840	852	864	876	888	900	912	924	936
817	829	841	853	865	877	889	901	913	925	937
818	830	842	854	866	878	890	902	914	926	938
819	831	843	855	867	879	891	903	915	927	939
820	832	844	856	868	880	892	904	916	928	940
821	833	845	857	869	881	893	905	917	929	941
822	834	846	858	870	882	894	906	918	930	942
823	835	847	859	871	883	895	907	919	931	943
										944

I would also like to receive manufacturers' booklets on.....

.....

.....

.....

Name: (Please Print).....

Title:.....

Address:.....

..... 1-61

A Listing of Your Business Connection is Important

TO THE AMERICAN CITY's Catalog Supply Department:

Please send me literature on items numbered as follows, starting on page 31

812	824	836	848	860	872	884	896	908	920	932
813	825	837	849	861	873	885	897	909	921	933
814	826	838	850	862	874	886	898	910	922	934
815	827	839	851	863	875	887	899	911	923	935
816	828	840	852	864	876	888	900	912	924	936
817	829	841	853	865	877	889	901	913	925	937
818	830	842	854	866	878	890	902	914	926	938
819	831	843	855	867	879	891	903	915	927	939
820	832	844	856	868	880	892	904	916	928	940
821	833	845	857	869	881	893	905	917	929	941
822	834	846	858	870	882	894	906	918	930	942
823	835	847	859	871	883	895	907	919	931	943
										944

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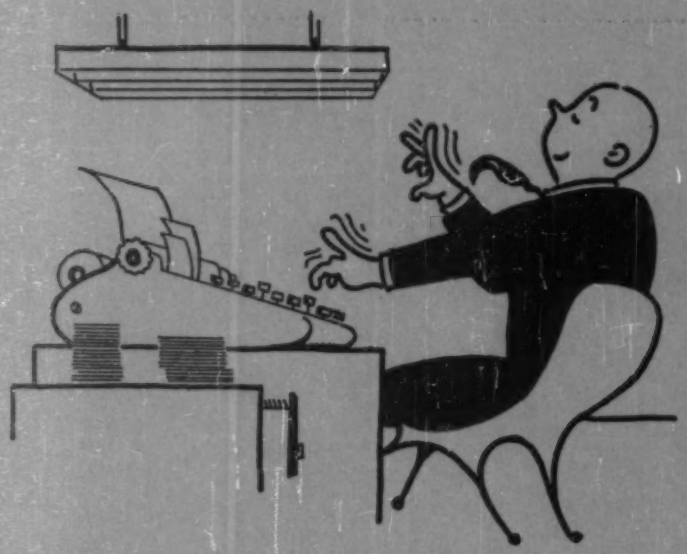
Title:.....

Address:.....

..... 1-61

A Listing of Your Business Connection is Important



KEEP UP WITH THE TIMES!

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THE AMERICAN CITY MAGAZINE

470 PARK AVENUE SOUTH

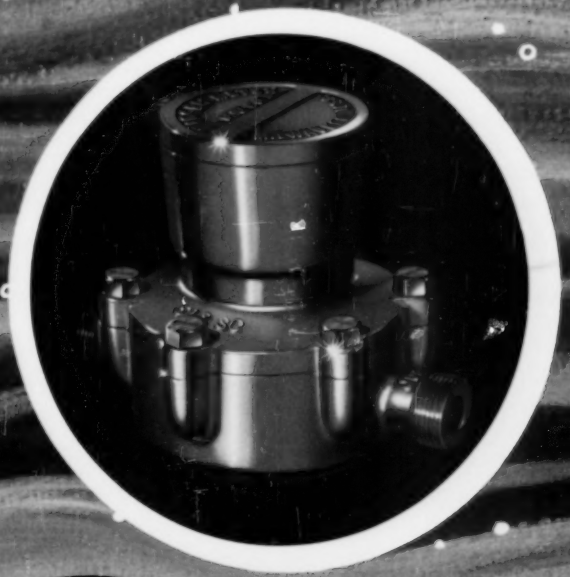
NEW YORK 16, N. Y.

Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.

NOW THE FIRST

MAGNETIC DRIVE METER

WITH A DISC METER CHAMBER



new Badger

Easy-Read

THE Badger *Easy-Read** GIVES NEW POWER TO A TIME-PROVEN PRINCIPLE

Here is performance unmatched by any other meter on the market. Only the Badger Easy-Read combines time-proven disc meter accuracy and dependability with the efficiency of magnetic drive.

The benefits of this new type meter are many, beginning with the elimination of the troublesome stuffing box and consequent drag and leaks.

Still more top features: a low-friction, self-cleaning sapphire jewel bearing, located in the water chamber, carries the thrust of the magnetic coupling . . . a tamperproof sealed register . . . a new, exclusive removable register . . . the most readable register face of any meter yet marketed.

And most important: Easy-Read's full-size disc and chamber provide interchangeability with standard Badger disc meters. You can modernize the Badger meters now on your system with a new housing top and register-gear train assembly.

Whether you convert your present system or install a new one — Badger Easy-Read means more economical operation, easier serviceability and dependable performance.

Ask your Badger representative now to give you complete details on the new Easy-Read meter.

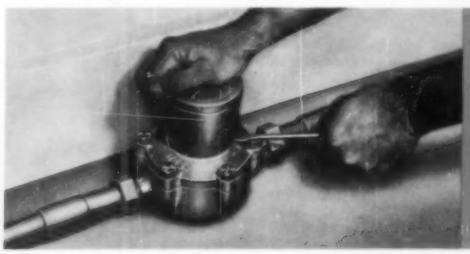
THE POSITIVE DRIVE OF PERMANENT MAGNETS

Each of the magnets that form the magnetic coupling consists of a non-corroding ceramic ring. They have the most desirable combination of magnetic properties and corrosion resistance available today. Intensive tests prove they are permanently magnetized.

Badger's magnets are also larger, giving greater power in the coupling to drive the register — power so strong it can drive *every* register or meter-driven accessory.

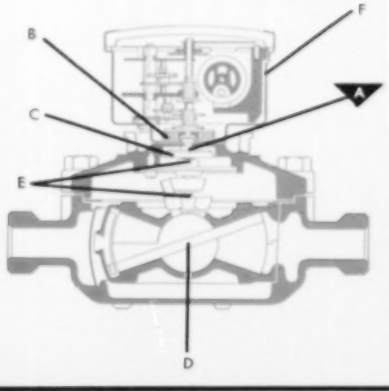
*Patent applied for

POWER THAT'S SEALED TIGHT



against leaks and tampering

against fogging, water and mud



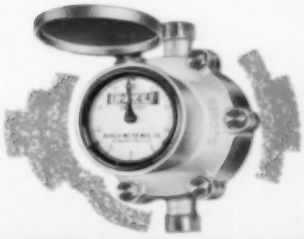
Stronger magnets assure more positive drive

As water flows through the meter chamber, a full-size disc turns the lower drive assembly. The entire assembly, including the four-pole ceramic ring magnet, is suspended in a dual bearing system.

Badger's stronger magnets transmit power through the cast bronze wall separating measuring and register units. Four poles lock to provide positive drive.

A—Sapphire jewel bearing. **B**—Driven magnet. **C**—Drive magnet. **D**—Disc. **E**—Radial bushing. **F**—Sealed register and gear train assembly.

THESE ARE *Easy-Read* exclusives:



BOLD NEW FACE—Digits are ¼" tall permanent, molded integral with wheel. Sixth number wheel extends totalizer capacity of ⅝" meter to 10 million gallons (1 million ft.).

REMOVABLE REGISTER is mounted by bayonet lock attachment. It's the only sealed, magnetic driven register that can be removed, even under water, without disturbing the meter in the line. Register and cover can be mounted in any of four positions for easier readings.

SPECIFICATIONS

Easy-Read MODEL SC-ER Split-case design

Easy-Read MODEL A-ER Frost-protective design

Meter Size Inches	Net Weight Lbs.	Length Inches	Width Inches	Height Inches	Port Holes Center to Base	Length Coupling Inches	Safe Operating Capacity G.P.M.
MODEL SC-ER							
5/8	10 3/8	7 1/2	5 1/2	6 1/4	1 7/8	2 3/8	20
5/8 x 3/4	10 1/2	7 1/2	5 1/2	6 1/4	1 7/8	2 1/2	20
MODEL A-ER							
5/8	10 5/8	7 1/2	5 1/2	6 5/8	1 7/8	2 3/8	20
5/8 x 3/4	10 3/4	7 1/2	5 1/2	6 5/8	1 7/8	2 1/2	20

ANOTHER IN BADGER'S BIG PARADE OF NEW PRODUCTS FOR BETTER WATER METERING

Twice within a year, Badger has introduced pace-setting products to the water meter field. The Read-o-Matic®, the industry's first practical outdoor meter-register, and the powerful new Badger Easy-Read — to help water departments everywhere steadily increase operating efficiency and lower costs.

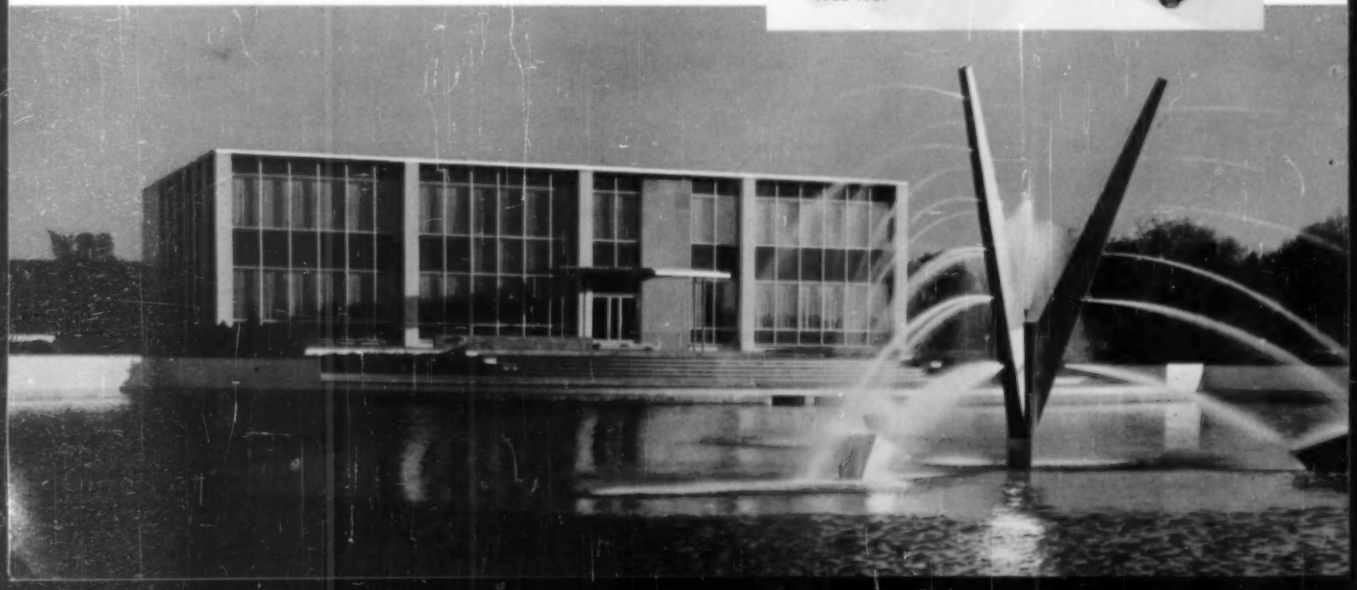
These products were developed after years of research and torture-testing. Work on a magnetic meter began in 1934. Badger's first magnetic drive meter was placed in service in 1940 (see inset photo).

These "pioneer" meters led to the development of the new Easy-Read and its superior, permanent magnets.

New products are part of Badger's program to better serve the water works industry. For information on any of our meter products, see your Badger representative or write direct to Badger Meter Manufacturing Company.

Badger Water Meters

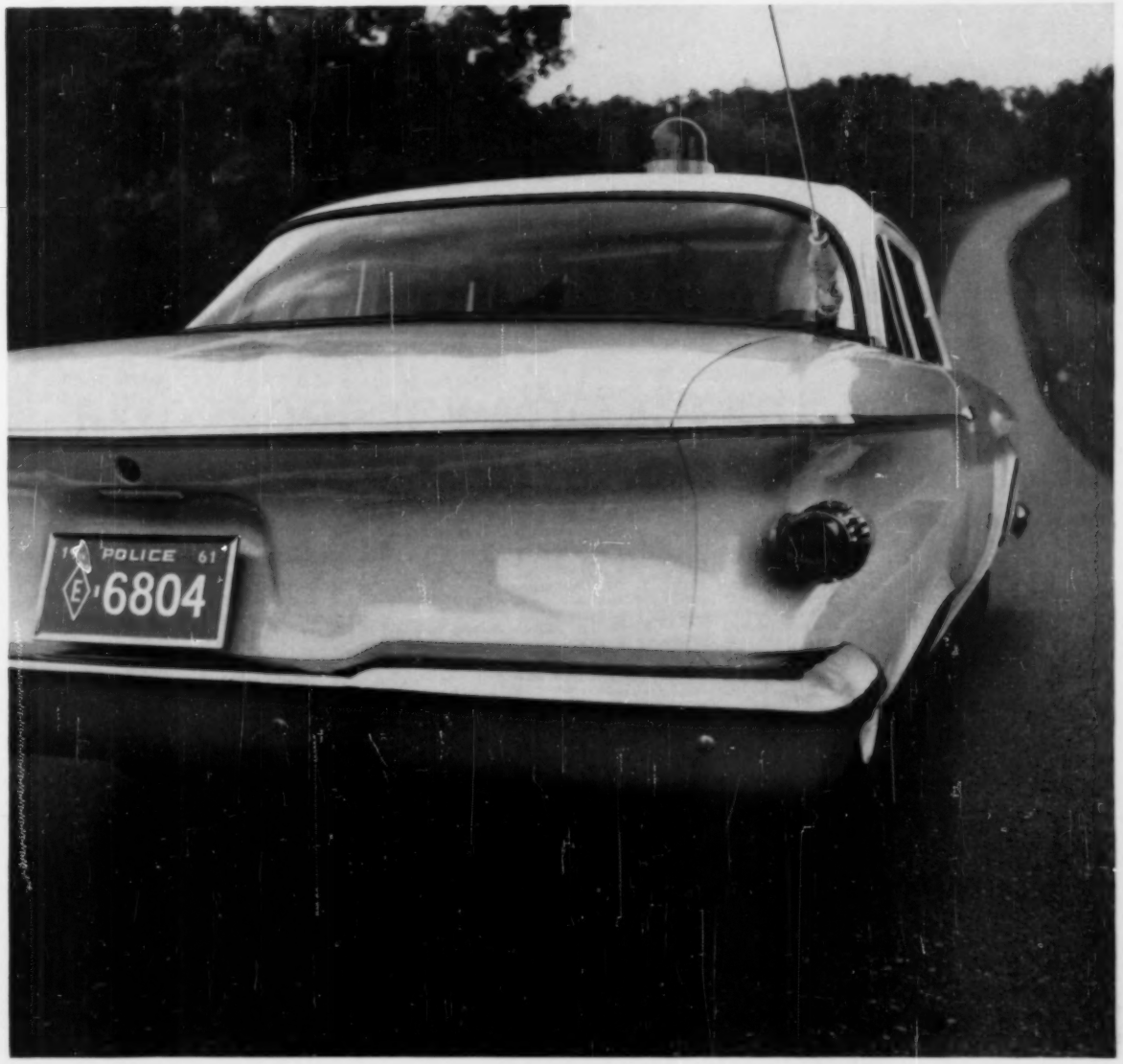
BADGER METER MANUFACTURING COMPANY
4545 W. BROWN DEER ROAD • MILWAUKEE 23, WISCONSIN
REGIONAL SERVICE CENTERS
Dallas 35, Texas — Seattle 4, Washington
Los Angeles (Compton), California — Long Island City 1, New York
Atlanta 18, Georgia — Milwaukee 23, Wisconsin
Cleveland 35, Ohio
BRANCH OFFICES in principal cities



THE POLICE CAR YOU'LL SWEAR BY—INSTEAD OF AT!

This 1961 Plymouth Pursuit Special 8 is a Solid Performer clear through. Its rugged reliability springs from Unibody—welded, quiet, tough. Your officers will swear by the standard Golden Commando V-8. This "super" engine responds with lightning-quick action, takes the hottest chases in stride. Heavy-duty 12-inch Total-Contact Brakes, Torsion-Aire Ride, new heavy-duty alternator are all included at *no* extra cost. This is the one they don't outrun. See your Plymouth dealer and see for yourself today!

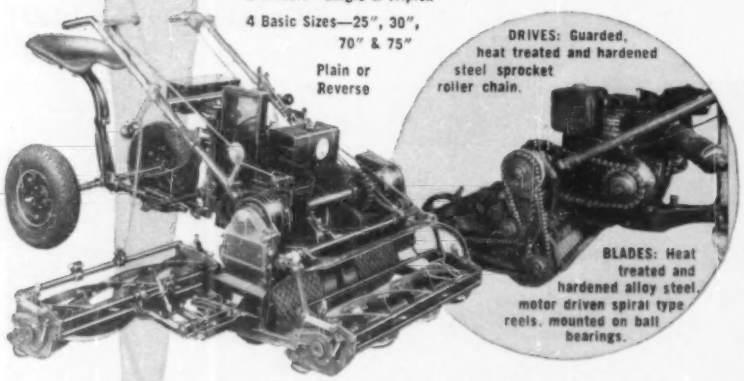
61 PLYMOUTH
SOLID PERFORMER



Once over lightly!

that's all it takes with a full chain driven Locke POWER MOWER

2 Models—Single & Triplex
4 Basic Sizes—25", 30", 70" & 75"
Plain or Reverse


DRIVES: Guarded, heat treated and hardened steel sprocket roller chain.
BLADES: Heat treated and hardened alloy steel, motor driven spirat type reels, mounted on ball bearings.

Locke's exclusive "floating" action, "finger-tip" control and perfectly balanced, chain driven synchronized cutters assure

- Streakless cuts
- No rolled down or uncut grass

The entire mower travels on the cut grass and overhangs raised borders by 1/3, saving up to 50% hand trimming.

8 Reasons why Lockes are your best buy:

1. No belts to slip.
2. Overhangs raised borders by 1/3.
3. Turn at any angle, without raising units.
4. Gauge shoes prevent scalping; require less power to propel; less effort to manipulate.
5. Full floating cutters follow contour of the ground.
6. Side cutters raise vertically for storing and transportation.
7. B&S Motors are guaranteed and serviced by B&S, Locke and its dealers.
8. Riding sulkies attach in seconds.

Save time, money and energy! See your Locke Service Dealer now for a demonstration, or write.

Locke **POWER LAWN MOWERS**
1315 Connecticut Ave., Bridgeport 1, Conn.
A product of The Locke Steel Chain Co.

Send for these New Locke data sheets

Locke Mower Div.
The Locke Steel Chain Co.
1315 Connecticut Ave, Bridgeport 1, Conn.
Gentlemen:
☐ We would like a demonstration. Have your Dealer phone.
☐ Send your latest literature.
NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE ____ STATE _____

Now is the time to take your grass cutting costs seriously. ASK YOUR LOCKE Service Dealer for the facts, or write.

FREE catalogs
You will find of interest

Write to address given or circle corresponding number on free post card on page 51.

New Catalog on Street Lighting Standards

910 Full engineering data on latest designs in seamless round tapered aluminum lighting standards for street, highway and area lighting are to be found in this new catalog, available from KERRIGAN IRON WORKS CO., DEPT. A-1, NASHVILLE, TENN.

Reduce Vandalism with Light

911 Proper floodlighting reduces vandalism, slashes juvenile delinquency, has been known to cut robberies by as much as 65%. WIDELITE CORP., P. O. BOX 191, DEPT. F111, HOUSTON 1, TEXAS, can provide you with detailed reports and literature on protective floodlights with special anti-vandalism features.

Grounds Maintenance Tractors

912 You'll find helpful ideas on mowing, leaf mulching, landscaping, soil handling, sweeping, turf-building, snow clearing, etc. in the illustrated booklet "Ford Tractors, Equipment for Grounds Maintenance," available from TRACTOR & IMPLEMENT DIV., FORD MOTOR CO., 2500 E. MAPLE RD., BIRMINGHAM, MICH.

The K-10 Fire Hydrant

913 This hydrant is available in 4, 4½ and 5-inch sizes and a variety of pipe and connections. *Bulletin* 591 gives pertinent facts, points out how it combines lower installation and maintenance costs with maximum protection. Write KENNEDY VALVE MFG. CO., ELMIRA, N. Y.

Signs and Markers

914 Easy-to-read four-way (2 double face) street name signs which retain their visibility around the clock are the subject of *Brochure* AC. Also available from LAKE SHORE MARKERS INC., 654 W. 19TH ST., BOX 59, ERIE, PA., is literature on markers for other municipal needs.

Reline Pipelines In-Place

915 When pipelines are rehabilitated the Spunline way, not only does flow increase, pumping costs drop, and traffic move without interruption, but pipe does not have to be removed and savings are accrued. Write PIPE LININGS, INC., 2414 E. 223RD ST., WILMINGTON, CALIF.

Lightweight Motor Drill

916 Designed for on-the-spot drilling, the completely self-contained Cobra drills in any position up to 45° and as much as 26 feet of hole per hour in hardest granite. For descriptive literature, write Dept. AC-7, ATLAS COPCO, 545 FIFTH AVE., NEW YORK 17, N. Y.

Tax Equalization Appraisals

917 Cole-Layer-Trumble offers a quarter of a century of experience in producing high quality appraisals for local tax equalization purposes. For descriptive brochure, write COLE-LAYER-TRUMBLE CO., 11 W. MONUMENT AVE., DAYTON 2, OHIO.

New Multipurpose Sewage Treatment Unit

918 *Bulletin* SM-1018 tells how the Clari-Thickener successfully combines sludge thickening and primary or secondary clarification in a single tank and points out the many advantages of the unit. For a copy, write THE EIMCO CORP., BOX 300, SALT LAKE CITY, UTAH.

(See page 60 for more Bulletins)

Photo Courtesy Bureau of Public Roads, Dept. of Commerce

Icy roads like the one above are quickly changed to safe, bare pavements with Columbia Calcium Chloride–rock salt mixtures.

SKIDPROOF ICY ROADS FAST

with Columbia Calcium Chloride-Rock Salt Mixtures

If your winter road maintenance program leaves something to be desired . . . something like bare, safe pavements, chances are you aren't getting the benefits of Columbia Calcium Chloride-rock salt mixtures. No other material gives you these advantages:

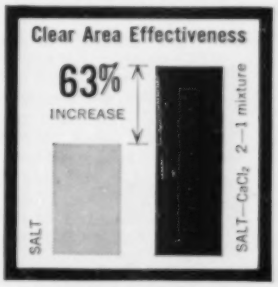
BARE PAVEMENT FASTER—Test results (right) prove the ice melting action of Columbia Calcium Chloride-rock salt mixtures.

ALL TEMPERATURE EFFECTIVENESS—Mixtures give quick melt at all temperatures—from freezing to sub-zero.

NO MATERIAL LOSS—Columbia Calcium Chloride-rock salt mixtures dissolve quickly, penetrate the ice—aren't scattered by wind and traffic.

SAVE TIME, MONEY—Columbia Calcium Chloride and rock salt mix easily, can be stored outdoors under tarpaulins or in covered sheds and bins. Bulk purchase and storage help stretch maintenance budgets.

Write to our District Sales Office nearest you or to our Pittsburgh address for more information. Do it now before the next snow storm ties up your roads.



Clear pavement area two hours after application of calcium chloride-rock salt mixtures is 63% greater than salt alone in 25-30° temperature range. (Based on field studies in Michigan sponsored by the Calcium Chloride Institute.)

You'll like doing business with Columbia-Southern

columbia | southern chemicals

COLUMBIA-SOUTHERN CHEMICAL CORPORATION • A Subsidiary of Pittsburgh Plate Glass Co., One Gateway Center, Pittsburgh 22, Pa.

DISTRICT OFFICES: Cincinnati • Charlotte • Chicago • Cleveland Boston • New York • St. Louis • Minneapolis • New Orleans • Dallas Houston • Pittsburgh • Philadelphia • San Francisco

IN CANADA: Standard Chemical Limited

CATALOGS for Improved Municipal Services

Write to address given or circle corresponding number on free post card on page 51.

New Flow Meters for Water, Sewage

919 A new flow meter is available for water and sewage purification plants. Known as Whirl-Flo, in sizes from 2 to 16-inches, a flow range of 10:1 and accuracy of 0.5% it uses a vortex-velocity principle for measuring liquid or gas. Write MINNEAPOLIS-HONEYWELL REGULATOR CO., WAYNE AND WINDRIM AVES., PHILADELPHIA 44, PA. and ask for *Catalog* C295-1 and *Data Sheet* 10.3-9.

It's Lethal—to Mosquitoes

920 If you want to build a mosquito control program around an economical, heat-stable, effective knock-down-and-kill fogging agent, which can be used alone, with DDT or with malathion, ask the SANITARY CHEMICALS DEPT., ROHM & HAAS CO., WASHINGTON SQ., PHILADELPHIA 50, PA., about LETHANE 384.

Protects Vital Installations Against Power Failure

921 Engineering catalogs on Redi-Torq automatic combination gear drives explain how these units provide round-the-clock protection against power failure in water, sewage and fire installations. Write JOHNSON GEAR & MFG. CO., LTD., 8TH AND PARKER STS., BERKELEY 10, CALIF.

the Priceless Ingredient

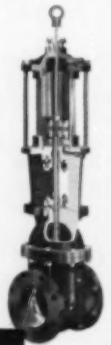
The priceless ingredient theme originally was applied to medicines, and is not new. But it can be applied to other products – even valves. Of course, the priceless ingredient in a product is an invisible force, with neither shape nor form. Yet this intangible element has set M & H apart in its field and is a prime reason for the Company's growth and prestige.

This priceless ingredient is the personal integrity of the M & H organization – the engineer with his problem of design, the procurement personnel who select raw materials, the chemist in his laboratory, the core maker, the moulder, the machinist, the inspector, the shipping department, the sales personnel, the management. Each man takes personal pride in his individual contribution to the job of furnishing you a top-quality M & H Valve or Hydrant – one or a carload.

The integrity of these individuals is priceless –because it is not for sale and cannot be bought. It is the extra ingredient which is responsible for placing M & H in the forefront of the American valve and hydrant industry.

It is one of the prime reasons for the superior quality of M & H valves and hydrants which appeals so strongly to engineers, utility men and industrial operators.

(No. 8 of a Series)



M&H VALVE AND FITTINGS COMPANY
ANNISTON, ALABAMA
SUBSIDIARY OF WALWORTH

Helps Waste Treatment Along

922 A dry powder accelerates sludge digestion, cleans collection system lines, controls odors, breaks down lubricating oils that kill digestors. It's called Bionetic and is both convenient and economical to use. For literature, write RELIANCE CHEMICALS CORP., BIONETIC DIV., P. O. BOX 19343, HOUSTON 24, TEX.

Turf Maintenance Tools

923 These machines—8 in all—hold the key to simplified turf maintenance. They'll enable you to improve turf at low cost and cut better quality sod faster. There's a size and type for every user. Request literature from RYAN LANDSCAPING EQUIPMENT CO., 871 EDGERTON ST., ST. PAUL 1, MINN.

Plaques for Municipal Use

924 Bronze, aluminum and nickel silver plaques for memorials, honor rolls, tablets, testimonials are specialties of the INTERNATIONAL BRONZE TABLET CO., INC., 150 W. 22ND ST., NEW YORK 11, N. Y. Write for *Catalog* A-118; for medals and trophies ask for *Catalog* B-118.

Plastic Traffic Cones

925 Lightweight, easily adaptable Safe T-Cone traffic guides are used in hundreds of cities for traffic channeling, utility repair and line painting operations, and for emergency blockades. RADIATOR SPECIALTY CO., CHARLOTTE, N. C., will provide full story.

Cut New Filtration Plant Costs 45%

926 . . . and increase clear water capacity 100%. How? JOHNS-MANVILLE, BOX 14, NEW YORK 16, N. Y., reports it can be done through use of Celite diatomite filtration. Literature and details available from the company.

Fleet Savings for Cities

927 STUDEBAKER-PACKARD CORP., FLEET SALES DIV., SOUTH BEND 27, IND., reports that certified tests offer convincing evidence of the superior economy offered by the 1961 Lark to government fleet operations. These economies and the features that contribute to them are described in company literature.

When Selecting Pipe

928 The manufacturer of mechanical joint cast iron pipe recommends that certain rules of thumb be applied when selecting pipe for important municipal services. To obtain these recommendations, write AMERICAN CAST IRON PIPE CO., BIRMINGHAM, ALA.

Sewer Cleaning Equipment

929 . . . is the subject of a 32-page full-line catalog now being offered by TURBINE SEWER MACHINE CO., DIV. OF CHAS. H. STEHLING CO., 1303 N. FOURTH ST., MILWAUKEE 12, WIS. Also included is a recommended procedure for cleaning sewers.

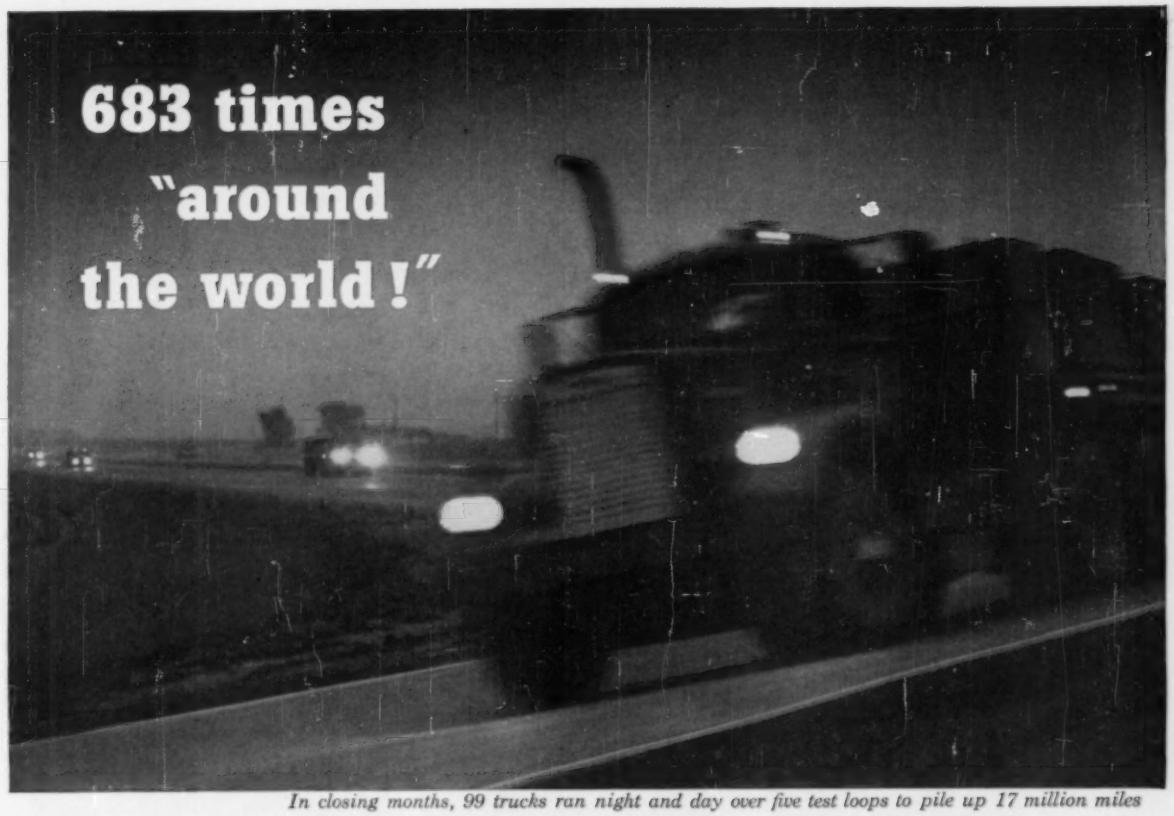
Outboard Motor

930 The 75-hp Starflite III is a big-powered outboard motor with many advanced features and the versatility to handle a wide range of municipal waterfront duties. Literature from EVINRUDE MOTORS, 4143 N. 27TH ST., MILWAUKEE 16, WIS., gives full facts.

Two New Algaecides Developed

931 The algaecides, of the organic arsenic type, are ANSAR 354 and ANSAR 201. They are estimated to be from 2 to 50 times as effective as copper sulfate and are applicable for water reservoir use. For further information, write COMMERCIAL DEVELOPMENT, CHEMICAL PRODUCTS DIV., ANSUL CHEMICAL CO., MARINETTE, WIS.

(See page 62 for more Bulletins)



In closing months, 99 trucks ran night and day over five test loops to pile up 17 million miles

It's the great NATIONAL ROAD TEST!

November 30th, test traffic ended in $27,000,000 pavement test sponsored by the American Association of State Highway Officials (AASHO).

More than 1,100,000 load applications and millions of scientific readings were recorded before the last truck rolled off the track near Ottawa, Illinois. The fleet of trucks included farm-size pickups to 54-ton semi-trailers.

On the test loops, 836 separate sections repeated nearly 200 different pavement combinations to provide a wide range of measurements.

Behind this pavement test are the most scientific methods ever used. Automatic electronic instrumentation and recording equipment assure unbiased, reliable findings.

Administered by the Highway Research Board of the National Academy of Sciences—National Research Council, the National Road Test will answer the big questions in today's highway construction. Engineers, officials and legislators will have invaluable help in designing pavements for the Interstate System—and all roads and streets.

Scientific readings by the millions have been analyzed by AASHO computers. "Statistically unassailable" facts on modern pavement design will result.

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 51.

Sewer Cleaning Machine Goes on Tour

932 FLEXIBLE INC., 3787 DURANGO AVE., LOS ANGELES 34, CALIF., reports its SeweRodeR is on a nationwide demonstration tour, showing its ability to clean more sewer per man per day per dollar—saving up to as much as $264 per mile in cleaning costs. For a demonstration, write the company.

Ultrasonic Cleaning

933 . . . gets greasy motor and gear parts, water and parking meter components, etc. clean almost beyond belief, with speed, safety and efficiency. The new 20KC transistorized cleaning system delivers up to 3 times the cleaning power in one-third the size. Write ACOUSTICA ASSOCIATES, INC., 10400 AVIATION BLVD., LOS ANGELES 45, CALIF.

Valves for Water Service

934 Darling-Pelton rubber seated butterfly valves for hydrostatic pressures up to 125 psi and velocities up to 16 feet per second are surer sealing and easier to maintain. They're described in *Bulletin* No. 5904. Write DARLING VALVE & MFG. CO., WILLIAMSPORT 10, PA.

products for
the public good
SINCE 1898
"THANKS FOR THE VOTING MACHINE
. . . We can all be thankful that voting machines were used in Knox County Tuesday . . . with the torrent of votes election boards would have faced a terrible task if the old paper ballots had been used . . . the counting would have dragged on through the night and until the early hours of Wednesday . . . A voter also has the assurance that his vote will be counted correctly when he votes by machine."
VINCENNES, INDIANA, "Sun-Commercial"—Nov. 8, 1960
AUTOMATIC
VOTING MACHINE
division of Rockwell Manufacturing Co.
Jamestown, N.Y.

Designing Water and Sewage Plants

935 New *Book* 2746 "StraightLine Sludge Collectors," makes available valuable engineering data on the design of water and sewage plants. Adaptation to rectangular, Uniflow or preaeration tanks is shown. Write for free copy to LINK-BELT CO., COLMAR, PA.

Hold on to That Digester Gas

936 Digester gas from sewage purification is a valuable fuel that can appreciably cut treatment costs, reports R. D. COLE MFG. CO. of NEWNAN, GA., whose current catalog will acquaint you with gas holders for the recovery of this gas for fuel.

Versatile Lettering Set

937 A new 8935 Doric lettering set, designed for business, school or home use, is described in a new bulletin now available from KEUFFEL & ESSER CO., THIRD & ADAMS STS., HOBOKEN, N. J. It shows with sample lettering how to reproduce letters in pencil or ink perfectly.

Outdoor Lighting Product Catalog

938 Seen the current Revere complete line catalog of matched outdoor lighting equipment? You'll find it contains a wide selection of equipment for incandescent, mercury and fluorescent lighting. Write REVERE ELECTRIC MFG. CO., 7420 LEHIGH AVE., CHICAGO 48, ILL.

Squeezes Dollars from Refuse

939 In Peoria, Ill. the Peoria Disposal Co. reports savings of 4 hours per man per day since it switched to Hydro E-Z Packs. Some of the reasons for this savings are made evident by the booklet "The Big Squeeze." Write HYDRO E-Z PACK DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO.

De-Ices Pavement

940 Electric snow removal at ramps, pedestrian crossings, steep roadways, driveways, bridges and at other hazardous locations is not uncommon municipal practice. Let NELSON ELECTRIC MFG. CO., BOX 5385, TULSA 16, OKLA., provide you with information on a heater de-icing system.

Compact Dry Feeder

941 B-I-F INDUSTRIES, 345 HARRIS AVE., PROVIDENCE, R. I., announces a new, low-cost dry feeder, designed for feeding dry filter aids for swim pool filtration, or feeding dry chemicals in municipal water treatment and pollution control operations. Request *Reference* No. 25-01.20-1.

New Prismatic Refractor

942 The Prismalume has been designed specifically for the Westinghouse OV-10 luminaire. It is recommended for effective economical lighting of residential and suburban streets. Let HOLOPHANE COMPANY, INC., STREET LIGHTING DEPT., NEWARK, OHIO, acquaint you with its many advantages.

Engineer's Level

943 *Booklet* N-2 gives full facts on this rugged precision instrument, designed to make the engineer's or surveyor's work more efficient, more convenient, more accurate. For a copy, write WILD HEERBRUGG INSTRUMENTS, INC., PORT WASHINGTON, N. Y.

Single Shaft Gas Turbine

944 New Model 305-S single shaft gas turbine for mechanical and generator drive is presented in *Bulletin* 186, which includes a discussion of applications and advantages of this 9000-hp unit and highlights important design features. Write CLARK BROS. CO., DIV. OF DRESSER INDUSTRIES, INC., OLEAN, N. Y.

Patented

Vandalism and theft go down when WIDE-LITES go up!

Police records show that proper floodlighting cuts robberies by as much as 65% . . . reduces vandalism . . . slashes juvenile delinquency. And a quick check of the Wide-Lite Protective Light's anti-vandalism features proves it is the ideal floodlight to protect schools, storage areas, jails and public buildings.

Its exclusive design features a mercury-vapor lamp plus two incandescent lamps to provide maximum light output. Any one of the lamps will continue to give protection even if the other two are knocked out. And its special tempered glass lens and rugged cast aluminum body protect the lamps from breakage.

Wide-Lite's exclusive rectangular reflector gives a broad light pattern that makes possible shadow-free lighting with fewer floodlights, saving installation costs. Maintenance, too, is low, because lamps used in Wide-Lite Protective Lights have many times the life of ordinary incandescents.

Get all the facts on how Wide-Lites can give your city more protection against vandalism and theft—send the coupon today!

WIDE-LITE

WIDE-LITE CORPORATION

P. O. Box 191 · Houston 1, Texas

In Canada: Wide-Lite Division, Wakefield Lighting, Limited, London, Canada

OUTDOOR AREA LIGHTS · VAPOR TITE MODELS · INDOOR LUMINAIRES
MOBILE WORKING LIGHTS · SPORTS LIGHTS · PROTECTIVE LIGHTS

WIDE-LITE CORPORATION
P. O. Box 191 · Houston 1, Texas Dept. FIII

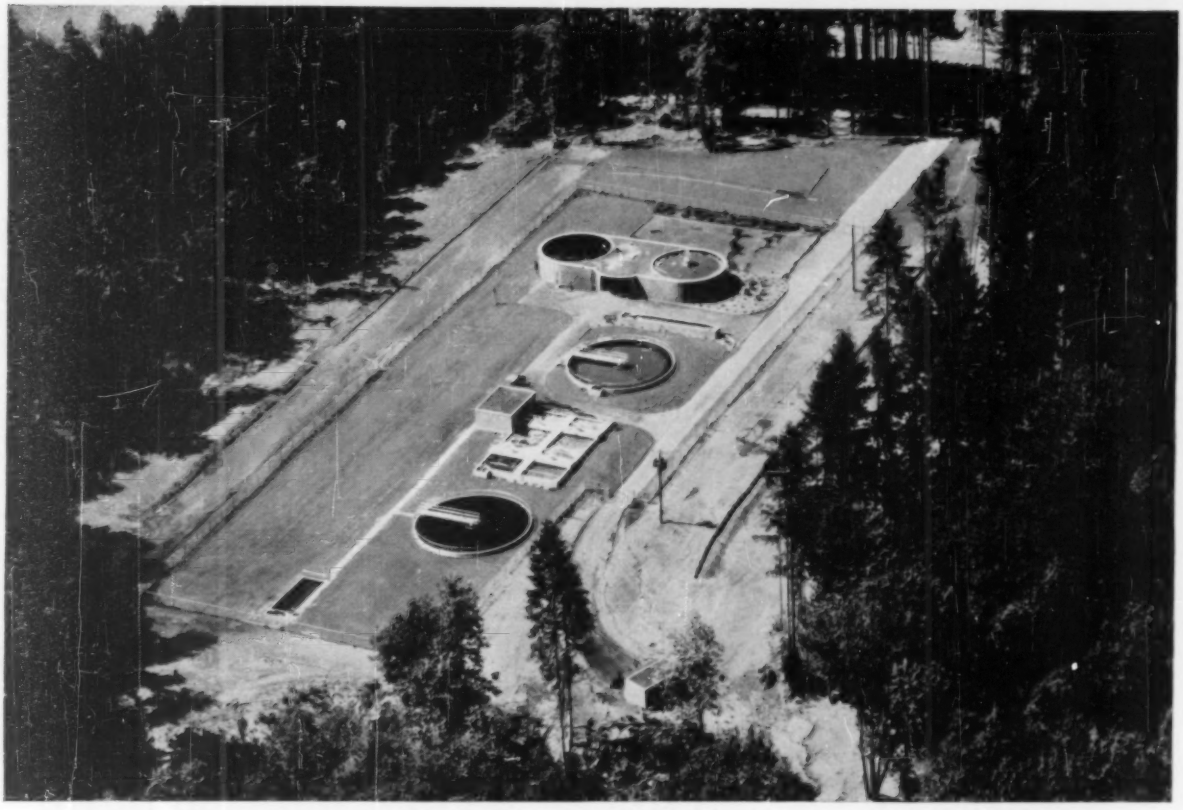
Send more facts on Wide-Lite Protective Lights. No obligation, of course.

Name_____

Title_____

Address_____

City_____ Zone____ State_____



Hillsboro, Oregon, adopts
Activated Sludge Treatment
with **D-O AERATORS**

A high degree of treatment, made necessary by minimum river flow during the summer and the presence of parks, picnic grounds and swimming areas downstream, is achieved in this 1.25 MGD activated sludge plant for the City of Hillsboro, situated west of Portland, Oregon. Overall B.O.D. reduction is well in excess of 90%.

Key to successful operation is the use of the D-O Aerator – a radically new design providing exceptionally high oxygen absorption efficiency, with virtually no problems of clogging and maintenance. Treatment units include 45′ dia. Dorr Primary and Final Clarifiers and four D-O Aerators. Two Aerators are installed per basin. Each basin is 56′ long x 18′6″ wide x 15′ s.w.d. to provide a liquid design detention of three hours. For information on the new D-O Aerator, write for Bulletin No. 7316 to Dorr-Oliver Incorporated, Stamford, Connecticut.

Consulting Engineers: Stevens and Thompson, Portland, Oregon.
Contractor: Lloyd B. Reed, Portland, Oregon.

DORR-OLIVER
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

BRUSH DISPOSAL CREWS OPERATE FULL TIME WITH THE TROUBLE-FREE FITCHBURG CHIPPER

CITY

This low-maintenance Fitchburg Chipper is disposing of brush in the City of Holland, Michigan.

UTILITY

"Our men have been particularly pleased with their Fitchburg Chippers . . . they are rugged and reliable."

Rockland Light & Power Company
Nyack, New York

TREE COMPANY

"We have never had one (Fitchburg Chipper) wear out or give excessive trouble." Chipper still operating after 9 years.

Davey Tree Surgery Co. Ltd.
San Francisco, Calif.

PUBLIC WORKS DEPT.

"Our Fitchburg Chipper consolidates the bulk, thereby lessening dumping operations. It requires minimum maintenance and manpower."

Dept. of Public Works
State of Rhode Island

When crews go out to trim trees, it's costly to have machine breakdown. That's why foresters, park superintendents, line clearing supervisors, and tree companies prefer the Fitchburg Chipper. This well-engineered brush chipper is designed for busy, trouble-free service, no down-time.

The rugged Fitchburg Chipper requires little upkeep, and has low maintenance cost. It's economical to operate. And crews like the exclusive spring-activated feed plate which adjusts itself automatically to any size brush up to its rated capacity. This patented feed-plate provides protection from damage from foreign materials, makes for greater crew safety.

The Fitchburg Chipper is engineered to work fast, safely, and to be always "ready to go." It's the chipper which won't slow down your crews, lets you plan their work intelligently—saves you time and money.

Please send in the coupon for more information, and for copies of articles on chipping which appeared recently in leading publications. These feature articles describe five methods of brush disposal and ten new ways to utilize "by-product" chips. Send for your copies, they are well worthwhile.

FITCHBURG ENGINEERING CORPORATION
Dept. AC-11, Fitchburg, Massachusetts

☐ Please send me important articles which describe 5 methods of brush disposal, and 10 new ways to utilize brush chips.

☐ Please send more information on Fitchburg Chippers.

Name_____

Address_____

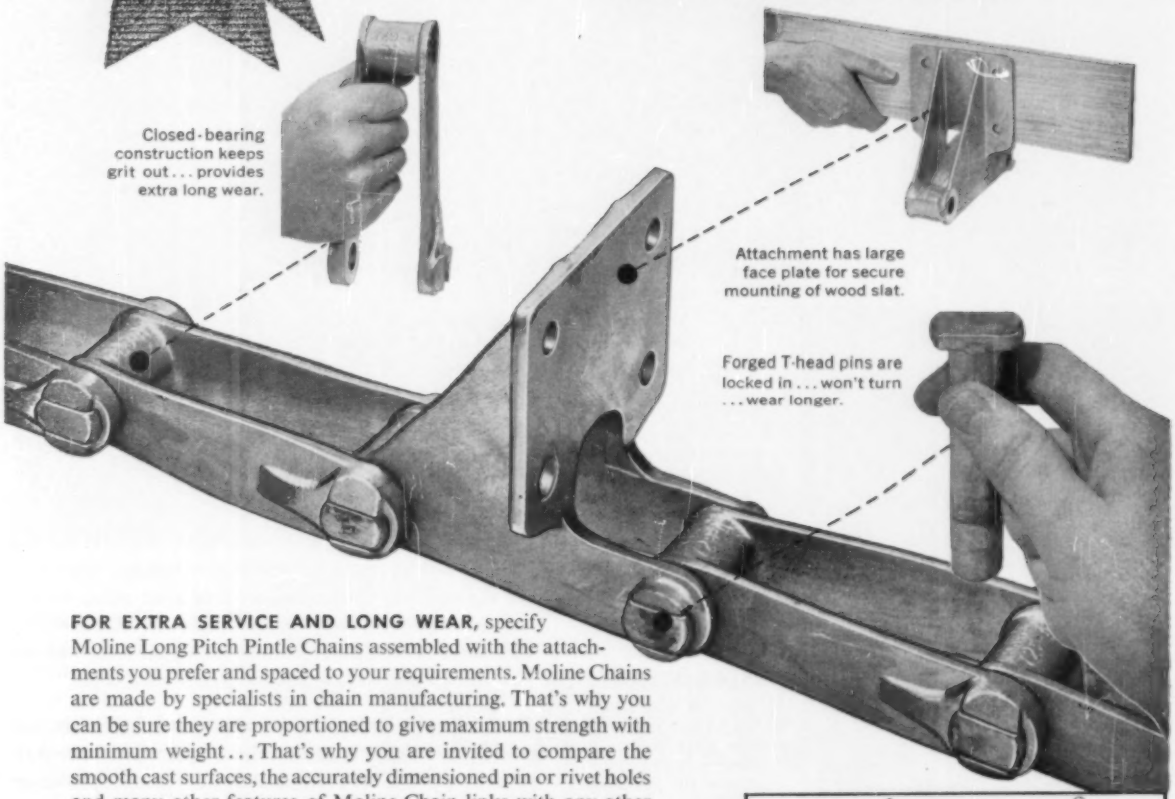
City_____ Zone____ State_____

FITCHBURG ENGINEERING CORPORATION FITCHBURG, MASS.

When selecting chain for rugged service in sewage treatment plants, remember...

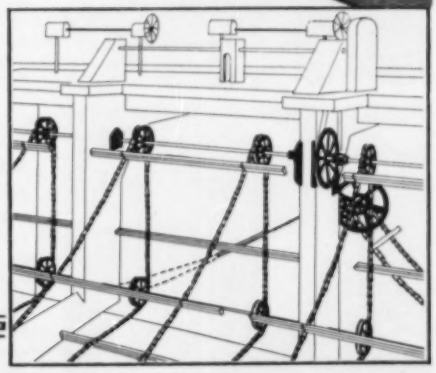
60 YEARS

Specialization makes a big difference!


Closed-bearing construction keeps grit out... provides extra long wear.
Attachment has large face plate for secure mounting of wood slat.
Forged T-head pins are locked in... won't turn ...wear longer.

FOR EXTRA SERVICE AND LONG WEAR, specify Moline Long Pitch Pintle Chains assembled with the attachments you prefer and spaced to your requirements. Moline Chains are made by specialists in chain manufacturing. That's why you can be sure they are proportioned to give maximum strength with minimum weight... That's why you are invited to compare the smooth cast surfaces, the accurately dimensioned pin or rivet holes and many other features of Moline Chain links with any other make. Moline's "*triple checking*" test procedures guarantee their uniform, high quality.

Moline Chains are interchangeable with "standard" chains of other manufacture and are available in Malleable, Promal or special analysis metal having special corrosion resistance.

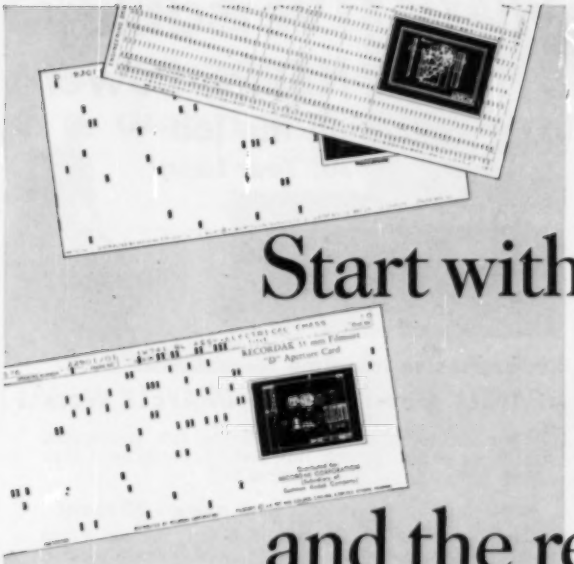


For complete information and prices, phone your local Moline distributor or write direct to the factory today!

LEADERS FOR 60 YEARS

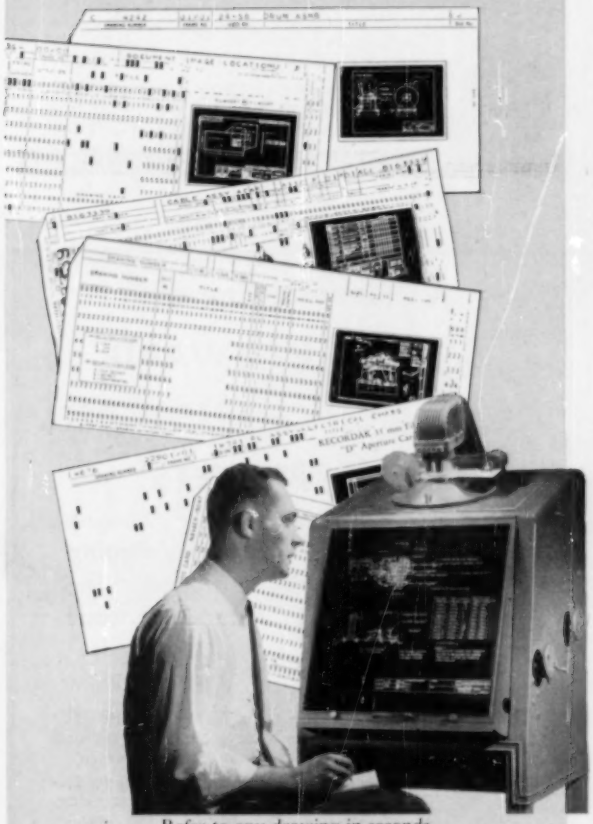
Moline MALLEABLE Chains

MOLINE MALLEABLE IRON CO.
St. Charles, Illinois
Specializing in the Manufacture of Chains



Start with the best pictures

and the rest is easy!



Refer to any drawing in seconds
with the RECORDAK Film Reader

RECORDAK

(Subsidiary of Eastman Kodak Company)

originator of modern microfilming
—now in its 33rd year

IN CANADA contact Recordak of Canada Ltd., Toronto

RECORDAK Precision Microfilming more than meets DOD requirements of 120 lines per mm resolution at 30 to 1 reduction ratio!

Your drawings, blueprints, and intermediates—negatives or positives—are reproduced as needle-sharp images with remarkably uniform backgrounds on low-cost 35mm film. Mounting these superb reproductions on aperture cards gives you a drawing file that's as dependable as it is automated!

Makes reference easier! Your microfilms when viewed in RECORDAK Film Reader are sharp and clear from top to bottom, side to side. Even the smallest detail is easy to see!

Makes "printmaking" easier! These superior microfilm pictures also assure sharp and clear enlargement prints. They can be made directly from aperture cards by low-cost photographic, xerographic, or electrostatic methods. Duplicate "microfilm" cards for branches, vendors, other government agencies can also be made for pennies apiece.

Free booklet gives more details on RECORDAK Precision Microfilming System available through Recordak and its nation-wide dealer organization.

MAIL COUPON TODAY

X-1

RECORDAK CORPORATION
415 Madison Ave., New York 17, N. Y.

Gentlemen: Send free booklet describing new RECORDAK Engineering Drawing System. No obligation whatsoever.

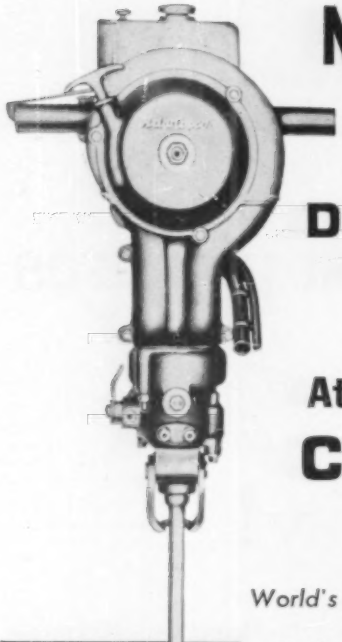
Name_____

Position_____

Agency_____

Address_____

City_____ Zone_____ State_____



Now! Get ON-THE SPOT DRILLING POWER ... with Atlas Copco's COBRA!

World's lightest motor drill!

Here's a drill you use to fill in on those jobs where cost, terrain, or time prohibits sending out a compressor crew. Weighs just 53 pounds; easily carried by one man. Completely self-contained with gasoline engine that drills 50-60 feet of hole on a tankload (2 qts.) of fuel. Drills in any position up to 45°. Perfect for light drilling anywhere. Write for complete literature. Address: Dept. AC-7

- One-man operation!
- One-man carry; piggyback rig available!
- Easy starting—any weather, any altitude!
- Multi-use flexibility!
- POWERFUL—26 or more feet per hole per hour in hardest granite!

Atlas Copco

545 Fifth Avenue, New York 17, N. Y.

610 Industrial Avenue
Paramus, New Jersey

930 Brittan Avenue
San Carlos, California

GRAVELY Versatility KEEPS Power on the job— All Year Long!

Cut expensive idle time

GRAVELY Doesn't Loaf— GRAVELY Works!

When you hire a man for a full-time job, you expect full time work. So why buy one-job equipment that loafs until its specialty is called for?

ONE 6.6 hp. Gravely Tractor powers 30 tools!
Choose the tools to fit your jobs—any season. From mowing to snow removal, the Gravely Tractor keeps busy saving time, saving money, year after year.

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STANDARD ORANGE PEEL for sand, gravel, loam, etc.

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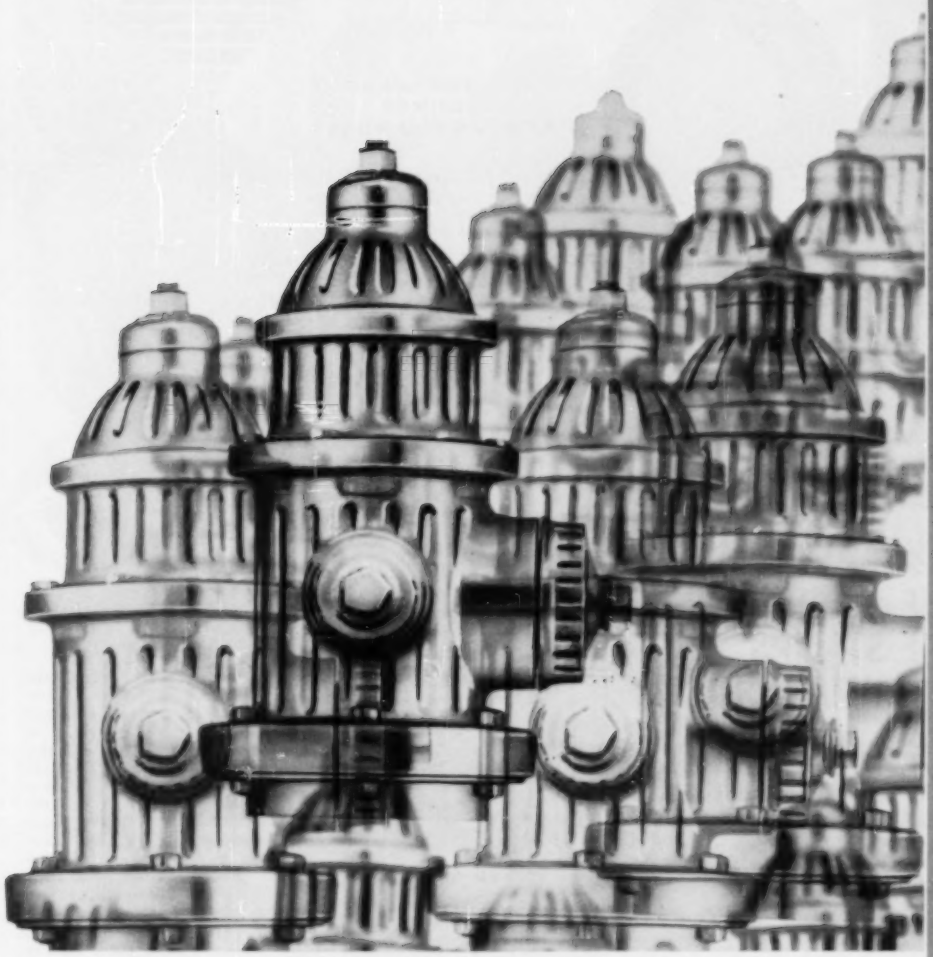
OVER A MILLION REASONS

WHY YOU SHOULD SPECIFY R. D. WOOD HYDRANTS AND VALVES



Reasons? Over a million hydrants now in service throughout the world. A number like that speaks for itself, says plenty about the outstanding features of the hydrant and the excellent service and reliability you can expect with R. D. Wood products.

Conform to A.W.W.A. specifications

R. D. WOOD COMPANY

Public Ledger Bldg., Independence Square, Philadelphia 6, Pa.

Established in 1803

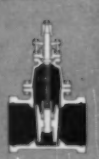
Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds)

THIS IS THE R. D. WOOD LINE

R. D. Wood Mathews Modernized Hydrant with replaceable barrel.

R. D. Wood Mathews Flange Barrel Hydrant . . . dry head construction keeps it operating in every kind of weather.

R. D. Wood Swivel Joint Hydrant can be faced in any direction.



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TIME RECORDERS
TIME STAMPS
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You can eliminate time leaks and increase the efficiency of all departments with a Lathem machine. Built for a long life of care-free service, Lathem machines are especially designed and engineered to provide for ALL of your time recording needs.

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CARELESS WASH-UP PROCEDURES ARE COSTING YOU MONEY!

A pair of dirty hands with free access to an open can of soap may well be the reason your company handcleaning bill is such a costly item. Provide an effective way of controlling the amount of soap being wasted by your employees, and you'll prevent the greatest part of your handcleaning dollar from being washed down the drain.

GO-JO'S HEAVY DUTY DISPENSER CONTROLS WASH-UPS... SAVES YOU MONEY!

Designed to eliminate waste, the Go-Jo Heavy Duty Dispenser delivers just the right amount of Go-Jo to get even the grimiest hands spotlessly clean. Go-Jo Creme Hand Cleaner is a concentrated formula containing GT-7 for dermatitis protection, plus soothing emollients to prevent chapping. When used in the Heavy Duty Dispenser, it provides four times as many clean-ups as "hand scoop" methods.

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The Gojer representative serving your area will be happy to show you how to cut as much as 75% off your handcleaning expenditures. Write us today.

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GOJER, INC.
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MANUFACTURERS OF go-jo PRODUCTS

REPLACES 4 TO 7 MACHINES

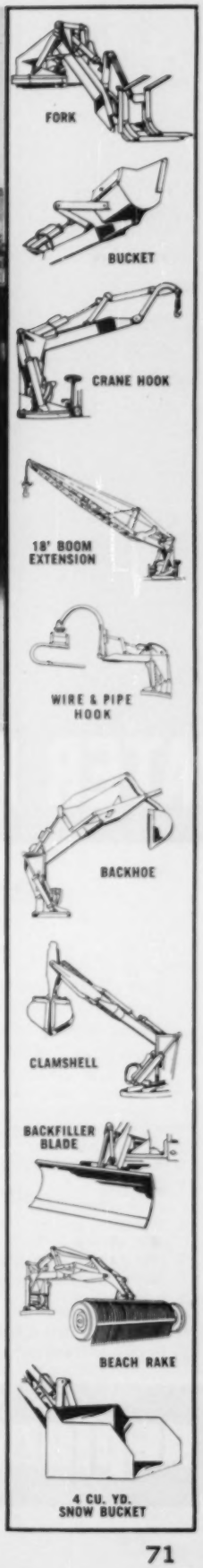
180° SPEED SWING

ALL-PURPOSE MATERIAL HANDLER

NOW—the *all-purpose* material handler that gives you one-man crew advantages. It's the soundest investment of all for your requirements because it does *all* the jobs . . . earns its way on one application after another. And its usefulness is multiplied to the extent that it replaces single-purpose, specialized equipment!

The best features of all material handling machines are combined in the Pettibone Speed Swing, plus the *exclusive* 180° boom swing—90° left or right—to make it the most efficient, *most versatile* all-purpose material handler in the field.

Example: shown above, the Speed Swing backfills a sewer trench. The 180° boom swing permits it to work parallel to the trench in a confined area with no gee-hawing or maneuvering of the machine. Traffic is not disrupted . . . can move safely in other lanes. Other applications are numerous: park and street maintenance, tree removal, culvert installations, loading and spreading materials with high speed operation, loading out old curbing and sidewalks, snow removal—to mention a few. And all on a cost-cutting operation basis. Shown at right, 10 quickly interchangeable attachments (by changing *only* 3 pins) that make the Speed Swing the *most adaptable, most versatile* all-purpose material handler of all!



Get the facts on how the Pettibone 180° Speed Swing can reduce your equipment investment, as well as your maintenance costs.

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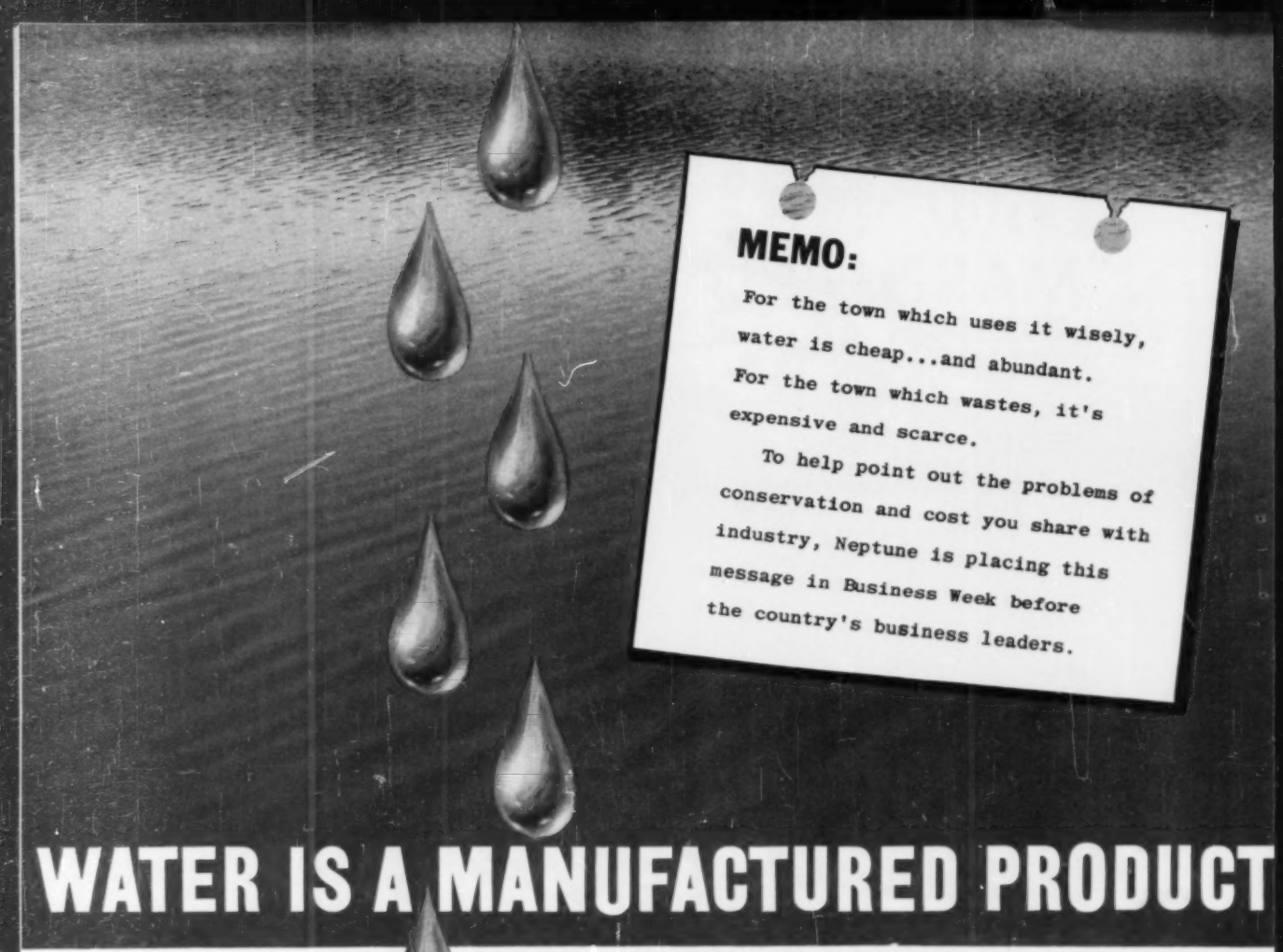

MEMO:
For the town which uses it wisely, water is cheap...and abundant. For the town which wastes, it's expensive and scarce.
To help point out the problems of conservation and cost you share with industry, Neptune is placing this message in Business Week before the country's business leaders.

WATER IS A MANUFACTURED PRODUCT

...too expensive to waste

Here's what Ansco Mfg. Co. gets out of a gallon of water (with the help of Neptune meters)

1. Well water at 53° used first for air conditioning
2. Chlorinated, used for spray washing
3. Used in chemical dehumidifier
4. Passes through heat exchanger
5. Passes through ammonia condenser
6. Goes to fire protection reservoir
7. Finally used to cool roof

Water in the lakes and rivers is free, but there it's only a *raw* material.

Before you can use it, you put it through a complete chemical manufacturing process. You need expensive equipment and chemicals to collect it, store it, pipe it and purify it. By that time water is much too expensive to waste.

But how do you keep your people from wasting it?

Install water meters at every key point in your plant. Measure what every department or process uses. Ask the meters to uncover hidden leaks and careless habits. They show where you can save with automatic shut-off devices, by improving heat exchangers, by altering processes, by recirculating and reconditioning water for re-use. Don't dump a drop down the drain until you've gotten full use out of it.

Call Neptune for help in saving water costs. Though Neptune now means more than just meters, water conservation—through accurate metering—is still our biggest business.

neptune
for a better measure of profit

NEPTUNE METER COMPANY

In Canada: Neptune Meters Ltd., Toronto, Ontario

LIQUID METERS
GAS METERS
ELECTRONIC SYSTEMS and COMPONENTS for MEASUREMENT and CONTROL

JANUARY 1961

The American City

Two applicants take a personality evaluation test as part of the personnel placement program.

Orlando, Fla., organizes a Personnel Department and develops a program that shows . . .

How to Select and Keep Top-Grade Municipal Employees

By **ROBERT S. CARR**
Mayor, Orlando, Fla.

When a city is growing, its municipal government has to invest not only in good equipment and supplies but, more important, in good personnel. You can make economies and raise the effectiveness of local government by hiring good people just as you can by using efficient methods and equipment.

In the last three years, Orlando's population has increased by 25%. Yet we have increased our staff of employees by only 11% and, what is most encouraging, our labor turnover has been the lowest in our history. Thus, the productive effectiveness of our city employees is increasing by at least 4% per year and undoubtedly more, since Orlando's municipal government finds itself having to perform more and different services each year.

The growth in the last three years was not unusual. In 1950 we had 52,000 people and in 1957 it had jumped to 75,000. But in 1957, the city council decided to lay special emphasis on getting and keeping city employees of high calibre, excellent morale, and with efficient production potentials. To do this, the Council organized a Community Employee Relations Division, naming as director Mr. R. C. Oberdahn.

One of the first measures taken by the new director was easy but important. "Scuttlebut," the old Navy term for unfounded gossip, has ruined the morale of more good organizations than one can count. If good information isn't available, then gossip quickly fills the void.

So we decided to make this information available in a way that everyone could use and trust. To develop an employee *esprit de corps*, the city started a new employee news sheet called *City Hallways*. We issue it monthly and fill it with articles about the various departments, an editorial by the mayor, notes and comments on new personnel policies and procedures, as well as news items from the various departments. We keep it up to date and accurate so that morale-destroying rumormongers don't have a market for their wares. We have found it successful and recommend it to any well-run city.

Next, he completely reorganized and streamlined our personnel record system. Everyone likes to know clearly where he stands. Most value this security more highly than a lucrative job but with insecure and unclear responsibilities.

The first point, in our new records procedures, is the personnel

application. This, written in the employee's own handwriting, becomes our master personnel card after he is hired. It contains such information as:

- **data approving the employee, and recommendation that he be hired.**
- **results of medical examination.**
- **anti-communist affidavit.**
- **the "over 50 years of age" waiver. Employees hired over 50 years old are not eligible for hospital, surgical and life insurance.**

Next, he created a "Change in Employment Status" form. This makes a record of transfers, promotions, demotions if they take place, and similar items. It eliminated many previous forms and a great deal of letter writing.

The new Employee Relations Division keeps a list of all authorized positions. When a department head finds that he has a job opening, he files an employee requisition form with us. The Division then recommends for promotion or transfer within the city government, if that is advisable, or searches for a new employee to meet the job specifications. Thus, the Division has direct control over the number of employees hired and makes recommendations to the department head strictly on merit.

To get good, sound employees, we adopted a psychological testing program. We give this to all employees except unskilled, semi-skilled and craftsmen to determine their ability and potential. It has been most effective and has reduced employee turnover greatly.

In addition, our Safety Department gives each newly hired driver of city vehicles a battery of tests developed by the Safety Council to ascertain the driver's ability. This, in conjunction with a thorough physical examination, has eliminated many applicants who may have been accident-prone.

Orlando's Community Employee Relation Division uses these materials in its program. City Hallways develops employee esprit de corps.

Job Evaluation

We then instituted a complete job-evaluation program, drawing on the aid of an outside consulting firm in order to make it impartial. As the result of this study, each employee now knows what his starting rate of pay is and the maximum salary for his present position.

It also provides a method of advancement. In one case recently, an employee, studying on his own time, gave himself training that made him more useful to the city. When a higher-rated position became available, we were able to promote this man, and this started a chain-reaction down the line, permitting four additional employees to receive promotions and a new employee to be placed at the lowest grade.

Policy Manual

To clarify matters, we developed a *Supervisor's Policy Manual.* This explains personnel policy, practice, and procedures. Each supervisor has a copy and can use it to give answers on all personnel problems in a uniform manner. The manual is an off-size, 7x10 inches, so that it stands out and cannot be filed with standard folders and forgotten.

The Employee Relations Division also revised the *City Employee's Handbook.* All employees receive a copy when they are placed on the payroll. It contains such information as hours of work, benefits, sick leave, vacations, and other pertinent information. It is pocket-sized, enabling the employees to carry it with them if they wish to do so.

In-Service Training

Finally, we developed a supervisory training program, basing it on the conference-leadership method. We first go over the *Supervisor's Policy Manual* so that each supervisor will have a uniform interpretation of city personnel policies, practices and procedures. After this, we continue to have sessions to discuss duties and responsibilities of supervisors, relationships with other departments, and any topics that require their attention.

Orlando has benefited by this streamlined personnel program. The city now profits by the services of employees equal to or better than those in most industries.

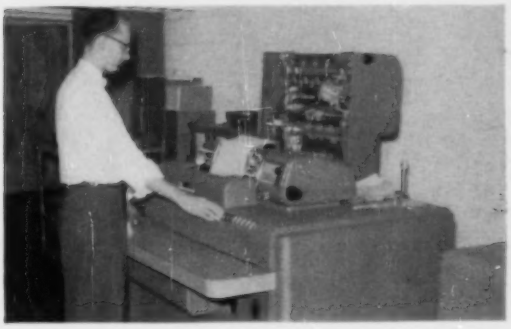
Moreover, the employees have a sense of "belonging;" they have a planned opportunity to progress and a knowledge that, if they wish to improve themselves, their potentials will be recognized.

We recently established one more personnel innovation that should be of interest. We now grant employees payment for tuition and cost of books for any out-of-hours educational courses taken to improve their job potentials by gaining new skills.

We will be glad to send copies of the forms and booklets we use to any interested officials. ◄◄

A Year With Punched-Card Accounting

By **A. E. RUGG**
Director of Finance
Sioux City, Iowa



The city's data-processing supervisor stands before a 403 accounting machine.

City government accounting consists of many record keeping functions involving many people in many departments and thousands of customers using water and sewers. It became apparent that the flexibility and accuracy of tabulating machines were needed in our complex governmental accounting.

We chose to begin with water and sewer billing. Post-card billing is now used. The customer account number and amount are punched into the stub of the bill, which when returned with payment, permits mechanization of cash receipts. Each billing cycle is completed in less time than before and a closer control over delinquent accounts follows.

Some of the by-products are preparation of meter reading sheets with name, address, and previous reading printed on them, automatic reconciliation and aging of outstanding accounts, preparation of courtesy reminders and cut-off orders, and reports to management heretofore not available.

The next application to be converted was payroll. It has relieved the departmental clerks of much of the laborious task of computing the department payroll.

At the close of each payroll period (semi-monthly) the data-processing department furnishes each division with a payroll time sheet for each employee to be used for the next period, showing name and job classification, base pay, employee's number, department number, accumulated sick leave, unused vacation leave, and date employed. On these time sheets, the clerk lists and codes the individual employee's hours, any change in rate of pay or number of dependents. The time sheets are then returned to our data-processing department where IBM cards are punched and used to calculate gross pay, withholding tax, F.I.C.A., retirement, other deductions and net pay. These cards are then used to write payroll warrants, make payroll register, employee earning statements, quarterly reports, W-2's, sick leave, vacation, and other reports. The use of the prepunched IBM cards permits mechanical reconciliation.

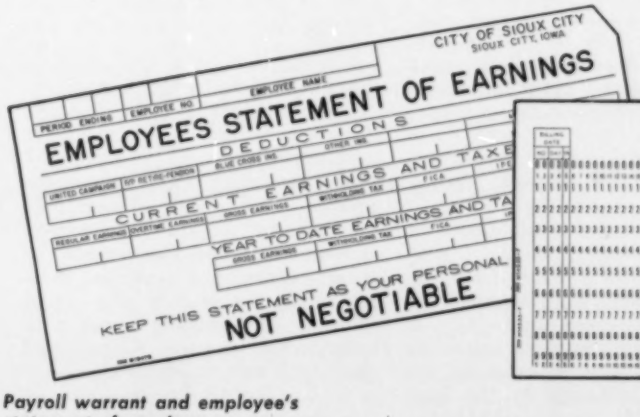
We are now able to reflect the cost of fringe benefits such as sick leave, holidays, vacation, and military leave. The report on overtime shows which departments are working overtime and permits study of the causes of such extra time. The work load can be readjusted and our personnel can be reassigned.

In the near future it is planned to convert to punched-card accounting our accounts payable, and appropriation and budget control.

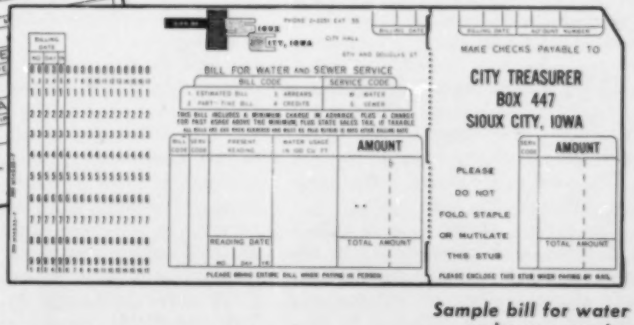
Our assistant director of finance, John H. Tracy, and data-processing supervisor Lawrence W. Runion, are largely responsible for the planning and success of our punched card system. Prior to the actual installation of equipment both enrolled in a course of study conducted by IBM in Endicott, N. Y. We are using the following equipment:

Two key punches
Verifier
Interpreter
Sorter
Collator
Reproducing punch
Calculating punch
Accounting machine with bill feed

Sioux City is the first municipality in Iowa to install punched-card accounting. Cornelius Bodine, Jr., is city manager. ◄◄



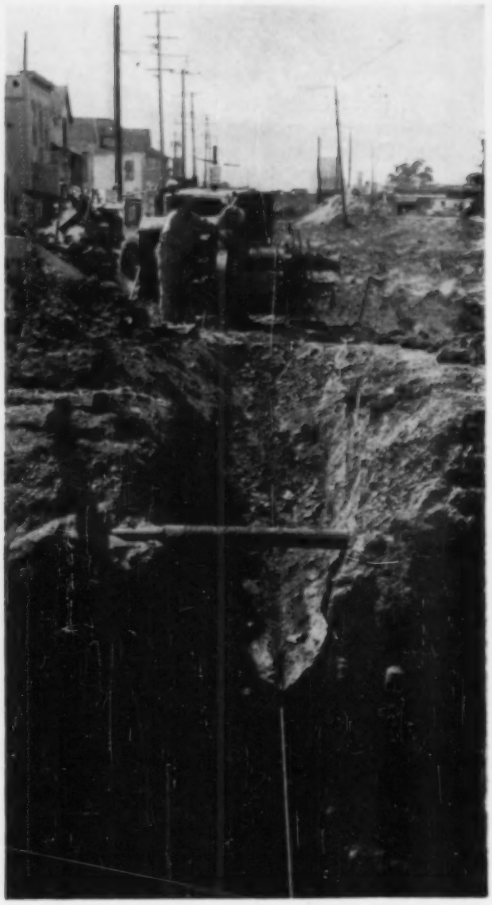
Payroll warrant and employee's statement of earnings.



Sample bill for water and sewer service

A crane lowers a length of 48-inch pipe into the invert of the old brick sewer.

The pipe slides into the 5x5½-foot brick arch sewer . . .



. . . and is pulled into place by an 85-hp engine with winch at the other end.

A Sewer Goes In a Sewer

. . . and solves a tricky drainage problem

By **JAMES E. McCARTY**
Supervising Civil Engineer
Oakland, Calif.

The problem—how to replace a half-century-old and failing sewer in a busy area without interrupting sewerage service.

The solution—thread the new line through the old.

The failing sewer was a 5x5½-foot brick arch constructed in the early part of this century. The arch showed signs of distress and had suffered some collapses in previous years. A portion of this trunk line ran under a street scheduled to be upgraded into a major artery, carrying six moving lanes, two parking lanes, and a landscaped center island with modern luminaires.

The solution was possible because of our continuing program of separating the storm water from the sanitary sewage. We determined by careful engineering study that a 48-inch conduit would receive the sanitary sewage contributed by the 1,385 acres tributary to the line. This could fit snugly within the old brick arch. We had to keep the gradient and alignment of the sewer unchanged in order that existing sewers and laterals would be intercepted.

The impending failures along the existing brick sewer affected only the crown of the arch. Preliminary measurements and examination by sewer maintenance personnel indicated that the 48-inch pipe would fit inside the existing sewer with a few inches to spare. We prepared plans with two alternatives:

- **provision for open trenching over**

To grout the annular opening between the new sewer and the old, this auger first drills through the old brick arch at 50-foot intervals.

A ready-mix truck then delivers the grout which is chuted down through the opening and urged along by compressed air.

the old sewer and placing the new sewer on the bottom of the existing sewer, or

• threading the new sewer inside the old, provided that grout be placed in the annular space between the new pipe and the old, remaining after placement.

We gave the contractor the choice of methods, with the added requirement that he provide protection of the pipe during threading or pulling. We also required that the contractor provide for the flow of sewage and storm waters at all times during the work. The successful bidder was Ransome Company, Emeryville, Calif., with Healy Tibbitts Construction Company as subcontractor for the underground work. The unit price was $45 per foot for the 48-inch, class III reinforced concrete pipe.

The contractor first checked the sewer with a wood template sized to the new 48-inch sewer, assuring himself that clearance was adequate. Next, he checked the sewage flow, and found it to vary from 24 to 28 inches of depth during the day, dropping to about 12 inches in the early morning hours.

The plan he conceived was to:

• excavate at manhole locations, and at intervening spots when necessary, to allow a maximum of 300 feet to be threaded in a single operation.

• thread the pipe with sewage flowing normally and complete the joints above sewage flow.

• during times of low flow in the early morning, divert the sewage to the outside of the pipe in the annular space, caulk the bottom of the joints, isolate the joints using small dams, drain, and complete the mortaring.

A Link-Belt 1½-yard crawler crane made the excavations at each manhole. The contractor then drew the pipe into position inside the existing sewer using a centering device to insure an even pull and a 60-hp stationary Hercules engine as a power supply for the winch. The men used whistles to maintain communications between the engine and the pipe movement.

After the engine had moved the pipe snugly into position, workmen then blocked and wedged it in the sewer to maintain alignment, and made the joints as planned. They then used saddle connections to reconnect the house laterals and reconnected the contributing sewer mains to the new manholes.

Upon completion of joints and manholes, the contractor arranged to fill the remaining space around the 48-inch pipe with cement grout. The crews gained access to the sewer between manhole excavations by using a 16-inch-diameter auger which bored through the top of the existing brick arch. The holes were placed a maximum of 50 feet apart, with some inspection holes at 25-foot intervals. An air jet facilitated the flow of the grout into the annular space.

The first section of the work included about 1,560 feet of 48-inch sewer. The second section will follow shortly. Otto Bohl served as resident engineer on the work for the city. Contractor supervision included Ken Heller, Ransome Company, and Roy Smith, Healy Tibbitts Company. ◄◄

The new packer truck with a modified hopper in the top reduced travel time to the disposal site to one fifth that formerly needed and cut crew size from three to two men.

Self-Supporting Refuse Program

Tacoma, Wash., operates the refuse collection division as a utility; relies on new equipment to help keep costs down

By **J. A. BRONOW**, Chief
Utility Services Division, Dept. of Public Works

A utility within the Tacoma Public Works Department maintains responsibility for refuse collection within the city. Being a utility, the operation must be entirely self-supporting from a service charge made to the customers. The basic residential rate for one can picked up once each week is $1.10 per month. A number of choices available to the customer make the commercial rates considerably more complicated. An ordinance requires all occupied dwellings or premises within the city to subscribe to the service.

Like many other communities, we are experiencing the problem of locating long-term sites for refuse disposal. For 30 years industrial areas on the tideflats have been used, but with the influx of industry space is limited. Thus, we continually search for other areas within an economical haul distance that will serve our needs for several years and thereby keep disposal costs to a minimum. However, the utility also keeps a wary eye on collection costs to afford economies here too. Replacing the collection equipment proved to be one of the most important steps made to reduce costs in this utility.

In the past three years we replaced our entire fleet of 26 trucks, some of them up to 13 years old. First the utility acquired four new 20-yard Leach bodies mounted on Diamond-T Tilt-Cab chassis. Routing these units in the areas with heavier population density resulted in a reduction of trips to the disposal site; the reduction amounted from three or four to two trips per day.

Downtown

Next our downtown paper collection truck came under attack. Here we replaced an old open-bodied truck with a Hydro E-Z Pack body with a modified hopper in the top, mounted on an International Tilt-Cab chassis. The packer-type body enabled us to discontinue the services of one collector which was formerly needed to tear and compress cartons.

Having taken care of these particularly troublesome routes, we turned our attention to the rest of the equipment and prepared specifications for 17 truck chassis and 14 packer-type collection bodies. The additional three trucks were equipped with specially constructed open bodies for use in special pickups such as yard cleanup or hauling debris from ships in the harbor. Equipment purchased consisted of International Tilt-Cab CO-190 chassis and 16-yard Leach bodies. Because of the confined areas and the great number of alleys in the city, we specified power steering on all the trucks. Frames were reinforced to withstand the twisting and rough use they are subjected to on the disposal site as well as in some of the alleys. This new fleet of 24 trucks is in constant use. In order to provide spares for use in case of breakdowns, our shop reconditioned two of the better older trucks.

Savings Realized

The savings on maintenance due to the purchase of these new vehicles was everything we expected. A comparison of maintenance costs for the first half of 1958, the last year in which the old vehicles were used, and the first half of 1960, using the entire new fleet, showed expenditures of $14,015 and $4,940 respectively.

Thus, in six months we realized a savings of $9,075 for maintenance only. These figures do not include gas, oil or tires.

Less tangible savings include fewer trips to the disposal area, since moved to a more distant location,

and the collection of new accounts without increasing manpower or fleet. The number of customers increases by about 500 new accounts each year. These we absorb into the regular routes.

Size of Crews

We made no great changes in the size of crews. However, the utility did realize savings on both the special trucks and the paper truck, using two men instead of three, for a total reduction of approximately three men. We continue to use two helpers and a driver on all the rear-load packers, since most collections are made in the alley where the driver does not have an opportunity to stop his truck and get out.

Another benefit consists of improved morale and better public relations. All our men wear blue coveralls with the utility's name in red lettering on the back and the individual's name in red lettering over the breast pocket. We also provide all men with caps of a darker shade of blue so that they are uniformly dressed. A local overall supply company, under contract to the utility, furnishes and cleans these coveralls so that with a change made twice weekly, the men present a favorable appearance at all times. This, combined with gleaming white trucks, makes a refuse-collection outfit second to none in the country.

Commercial accounts may have just about any service they need or desire. This means we go into some stores as many as two or three times each day, six days a week. If they can get along with one pickup per week, that is the minimum.

For one can once per week, the service reserved for barber shops, small real estate offices or other offices designated at the discretion of the utility, we charge $1.50 per month. Other than this the commercial rate is $2.65 for a three-can once-per-week minimum.

For business places having other than the regular number of cans to be picked up at each collection, we have what is known as a tabulated account. This requires the driver to keep track of the number of cans picked up at each stop, for which a charge of 20 cents per can is made. Should this be unsatisfactory or the material is such that it cannot be placed in cans, we apply an hourly charge of $8.50 for the time it takes the crew to collect the refuse and haul it to the disposal area. Commercial establishments requiring more than one collection per week are charged accordingly.

Disposal is our problem, for sites become more difficult to obtain each year. At present we are filling a low area for eventual use as a junior high school playground. Formerly we burned combustible refuse at the city disposal area and covered household garbage. Although burning has been discontinued, we accept all waste including demolition lumber, paper, old trees and other such items.

A Caterpillar D-7 tractor with a 7- to 10-yard scraper works the landfill area. The operation removes the cover material ahead of the fill and at the present time covers only the top of the fill nightly since to cover the 15- to 20-foot slope would require much more dirt than is at present available.

An interesting feature of our disposal practice is the annual "Open House at the City Dump" held each year during cleanup week. Sponsored by the Junior Chamber of Commerce, it becomes more successful each year.

All who come receive ice cream and pop, and from 10 a.m. to 2 p.m. a radio broadcast is made from the site. Prizes, donated by local business men, are awarded periodically in various ways. This past year some 1,500 cars and trucks responded to the invitation extended via radio, television and the local papers.

A request for "some more ice to keep the pop cold" bore out the effectiveness of the radio broadcast from the disposal area. Very soon after the broadcast someone made a trip to the disposal site bringing along 100 pounds of ice.

About a year and a half ago we began putting forth special effort to keep the area neat and clean. This we feel will pay dividends in the form of fewer complaints when we attempt to move the landfill into a new area. ◄◄

Gleaming white trucks and uniformed personnel are important public-relations advantages.

"Open House" at the disposal site during annual clean-up week results in hundreds of people bringing material to the disposal area. Some 1,500 cars and trucks answered the invitation this past year.

One of Schenectady's five blower-type loaders loads snow into a city-owned truck; the city also utilizes three conveyor loaders for this work.

Snow Fighters on Three Shifts

. . . win merchants' commendation for the storm-tested snow-and-ice-control program in Schenectady, N. Y.

By **JOHN W. NAGLE**
City Engineer

Snow and ice are not new to Schenectady, N. Y., and we feel that our method of combatting them, developed over the years, has proven most successful. Further proof came after a 13-inch snowfall last March in the form of a commendatory statement sent to Mayor Malcolm E. Ellis by the board of directors of the city's Downtown Merchants Bureau.

Schenectady, population 82,000, is located in the Mohawk River Valley. The city covers an area of 10½ square miles and has 190 miles of streets, of which 18 miles are hills on which ice-control measures must be employed. These hills have grades up to 17%.

Two large industrial plants, General Electric Company and Alco Products, Inc., employing approximately 25,000 people are located in downtown Schenectady. As a result we experience peak traffic conditions between 3:30 P.M. and 5:30 P.M. when the major share of these employees use the city streets in addition to normal daytime traffic flows. Two heavily traveled state routes cut through the heart of the city, one being the main Albany-to-Buffalo truck route.

Our 25-year average snowfall, from November through April, is 57½ inches. The 1959-1960 season brought us 63 inches of snow during this period with falls of six inches on January 13th; 5.3 inches on January 18th and 19th; eight inches on January 27th and 28th; and 13 inches on March 3rd and 4th.

In late November we establish a three-shift operation which permits immediate action whenever snowfall commences. This is particularly useful in the early morning hours when minor accumulations can be treated with salt to eliminate hazardous conditions on the hills and major traffic artery intersections before the morning rush hours. The three-shift operation also has all the other obvious advantages which accrue from getting an early start during periods of inclement weather.

Through extensive planning we

make every effort to eliminate hit-or-miss procedures in our program. This includes detailed routes for salt spreading, truck plowing, grader plowing, sidewalk plowing of city-owned property, and post-storm snow removal (insofar as possible).

During a storm, men and equipment are dispatched on specific assignments with detailed typewritten instructions. Upon completion of these assignments they report to the operations office for further tasks, or at the end of their shift they report any uncompleted work so that succeeding crews can complete the assignment.

Ice and Snow Control

At the outset of a storm the salt spreaders cover specific routes which include main hills, intersections on main traffic arteries and secondary hills. We have two Hi-Way, two Good Roads and two Torwel automatic spreaders and six Tarco "Scotchman" tail-gate spreaders for this operation. Salt spreading operations stop when snow accumulates to a depth of about two inches. We use approximately 3,500 tons of salt each year.

Snow-plowing operations normally commence when the snowfall reaches a depth of three inches. However, this varies with the time of day and the weather forecasts which we receive from the U. S. Weather Bureau in Albany and from a private weather forecasting service, Weather Services, Inc., of Boston, Mass. Careful analysis of all weather information has resulted in a more efficient operation at reduced cost. This is particularly true in moderate storms followed by rising temperatures.

We divide the city into 25 sections or routes for our plowing operations, and during the recent winter utilized 20 private trucks and five city trucks for this work. In addition to the truck plows we used five city-owned Galion graders. These graders operate in teams on previously assigned routes covering most of the main traffic arteries throughout the city. They also cover certain important island streets where they can operate more efficiently than trucks.

The city provides the mounts and plows for the private trucks and in the fall of the year we brief the operators on their responsibilities and operational procedures. They also receive maps of their routes with detailed instructions which must be carried in their trucks at all times. Since the same operator is assigned to the same route in every storm they soon learn the peculiarities of their routes, thereby greatly reducing the number of complaints received after a plowing operation.

Bureau of Service personnel mount one of the Good Roads reversible plows on a city truck; the city also furnishes plows and mounts used on private trucks rented for snow-plowing operations.

When the decision has been made to plow, we contact the private operators by phone advising them when to report to the City Garage to have their plow blades mounted. From the garage they proceed directly to their assigned routes and commence plowing. Three supervisors, dispatched in radio-equipped cars, oversee the work, check on breakdowns, report progress, and generally see that a good job is done. We pay a straight-time rate of $6.50 per hour for each truck rented.

Usually the city's 190 miles of streets are completely plowed in eight to 12 hours. It takes about four to five hours to make one pass on each street after snow stops falling. To insure bare pavement on hills and main intersections we spread a light application of salt after plowing.

Snow Removal

When the snow stops falling our regular Bureau of Service personnel begin the task of snow removal. Snow is completely removed from downtown business streets during the 11 P.M.-to-7 A.M. shift. The other two shifts handle narrow streets and outlying business districts. Placing special signs captioned "No Parking—Snow Removal" ahead of snow-removal crews has proven very effective. The crews remove all snow from curb to curb in all streets of the central business district within 48 hours after a storm.

We use five city-owned SnoGos in our snow removal operations. Graders pull snow from along the curb into windrows for pickup by the loaders. Trucks haul the snow to one of five previously established dumping areas located in various parts of the city. For loading heavy snow and ice we have two Barber-Greene loaders and one Nelson loader.

Sidewalk plows assisted by hand crews take care of sidewalks at city-owned property and crosswalks in the various business districts immediately following a storm. This alleviates conditions for pedestrians until the crews can haul away snow from the area.

We also use the SnoGos in drifted areas and on boulevards following a snowfall as conditions warrant. On boulevards the snow is plowed toward the island and then blown onto the dividing mall.

Our use of radios in public works dates back to 1951 when we made a modest beginning with the installation of two radios on our police broadcast band. The results were so outstanding that more radios were gradually added until last winter a total of 14 units were in operation on various pieces of equipment including salt spreaders,

graders, trucks, and supervisory personnel cars. We find this equipment invaluable in all public works activities, but particularly in snow and ice control work. Radio greatly facilitates equipment dispatching and reduces unproductive time formerly required to obtain new assignments or changes in assignments.

This past spring the city installed a local government radio network, utilizing General Electric equipment, with the aid of matching funds available through the Office of Civil Defense. This new system provides many advantages not previously available through the police network. Most notable of these is the ability to give instructions directly to our equipment operators and foremen without relaying the information through the police dispatcher. The former method was cumbersome and time consuming for all concerned. Twenty-three pieces of equipment are now radio equipped, making it possible to contact almost any crew when necessary or desirable.

Excellent Results

The 13-inch snowfall experienced last March proved the success of our program, for the public was not unduly inconvenienced at any time. This storm started about 4:30 P.M. on March 3rd and continued through March 4th. Salt spreaders went to work during the early phases of the storm, followed by plows at 11:00 P.M. on March 3rd. The plows worked through the night until mid-morning of March 4th when all streets were in fair to good shape although snow was still falling. Privately owned trucks with plows ceased operating due to increased traffic flow, but city plows worked where needed in various areas of the city We used several of the private trucks again on the night of March 4th, and by early the following morning all snow that had fallen during the day was cleared.

We started snow removal operations at 11:00 P.M. on March 4th. Crews worked through the night, completing the task in the central business district on the next regularly scheduled 11 P.M.-to-7 A.M. shift. It was after this storm that the Downtown Merchants Bureau commended the workers and the city administration for a job well done.

Direct responsibility for snow and ice control activities rests with the Bureau of Service, headed by John Szumiloski, Superintendent, aided by Lawrence C. Van Epps, Assistant Superintendent. This bureau is part of the Department of Engineering and Public Works which is headed by the writer. ◄◄

Manhattan Gets a Municipal Garage

Midtown Manhattan's first municipal parking garage opened to the public on September 19th, with a rate of $.25 an hour. It is the first of 16 parking terminals proposed by Traffic Commissioner Wiley to serve short-time parkers, such as Broadway theatergoers, Coliseum visitors and business visitors.

The five-story open-deck garage offers self-service. Parking stalls, 8½ feet by 18½ feet, are laid out so as to assure door-opening space. Aisles are 24 feet wide. Customers drive their cars up gently inclined slopes, park, and return to the street by one of the passenger elevators at either end of the building.

Automation has been incorporated into the garage. Machines issue tickets to customers entering building and automatically compute fees for those leaving. They are made by Shoup Electronics Inc., 139-05 Archer Ave., Jamaica, N. Y.

With the addition of the Eighth Avenue garage, the municipal parking system, sponsored by the Traffic Department, now serves over 10,000 motorists daily in 14 parking fields and two garages, the other in Brooklyn. ◄◄

Prominent Sanitary Engineer Retires

Frederick Holman Waring, the elder statesman of public health and sanitation in Ohio, retired on December 31, 1960, as Chief of the Division of Sanitary Engineering of the Ohio Department of Health. He served in that capacity since 1926; he joined the Ohio Department of Health in 1916.

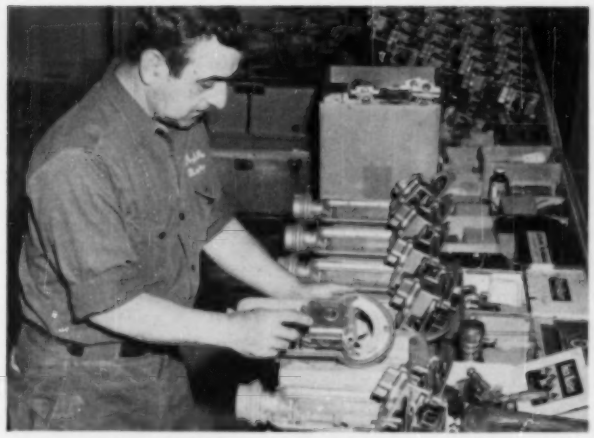
One of the prime instigators in the ambitious eight-state Ohio River Valley Sanitation Commission, Mr. Waring will continue as secretary of the Commission.

Through his enforcement of anti-pollution controls, Ohio River water can be, and is, used at least four times before it reaches the Gulf of Mexico.

He was born at Saratoga Springs, N. Y., October 5, 1890, and was graduated from Worcester Polytechnic Institute in 1912 as a civil engineer specializing in sanitary engineering. As an employee of a Boston firm, he went to work for the City of Cincinnati in 1912 on pollution in the Ohio River, making some of the first sanitary, bacterial and chemical studies of this problem.

The latest of many honors bestowed upon Mr. Waring is the Federation Emerson Medal for 1960 presented by the National Water Pollution Control Federation. The Clay Sewer Pipe Association, Inc., with headquarters at Columbus, Ohio, honored him with a special luncheon and the gift of a three-dimensional carving of his likeness. ◄◄

Barton A. Hall, president and general manager of the Logan Clay Products Co. (left), presents Mr. Waring with a carved-wood likeness.



Meter repair is a continuing operation.

They earned $85 per year but the city got only $50.

$100,000 More Revenue From the Same Parking Meters

By KENDALL H. LEE
City Manager
Asbury Park, N. J.

Asbury Park's 2,800 parking meters produced about $240,000 in 1959, against about $140,000 in gross revenue in 1956, from the same number of meters and the same rates. There are three main reasons for the improvement in income.

First, an investigation was made of alleged pilferage of parking-meter funds. This investigation resulted in indictments by the Grand Jury; charges were preferred by the city manager against certain police department personnel and resulted in the eventual dismissal of the accused.

Second, enforcement was stepped up. Prior to May 1957, all enforcement of parking-meter regulations was handled by the regular police officers. Since that time a meter patrol has been organized, composed mostly of women. These women receive special training in their responsibilities as well as in public relations. They have done an outstanding job at about one-half of the salary paid regular police officers.

Third, a complete change has been made in parking-meter maintenance set-up. City Treasurer Francis Mahoney was appointed supervisor of the parking-meter division. He sees that the monies are collected, counted and deposited under constant supervision. It is also his responsibility to see to it that the meters are repaired promptly.

That the maintenance crew may have a complete and accurate record of all defective meters, members of the meter patrol are required to file a report each day listing any and all meters which they have observed to be defective. In addition to this, one member of the maintenance crew must make a routine check of the prime areas on the beachfront and in the downtown section each morning, to note if any meters have been tampered with or damaged during the night as indicated by a bent post or a cracked meter head.

The city is interested in meter maintenance from two standpoints. One, a defective meter reduces revenue. Two, a defective meter is bad public relations. The visitor or resident who puts a dime in a parking meter which does not work quite properly feels that the city is negligent.

The parking-meter department has four employees under the city treasurer. Two of these employees are the meter collectors. The other two are meter maintenance men; one is in the shop at all times, and the other outside making repairs as they are reported daily.

During the winter months when the meters in the beachfront area are only used on weekends, the meter maintenance crew concentrates on rebuilding defective meters, painting and oiling them;

every two years all of the meters in the city are disassembled, the timing device is checked, and it is reassembled, oiled and repainted. In addition, all the poles supporting the meters are painted twice each year and the signs repaired and replaced.

Gyps

The maintenance crew must constantly cope with the people who insert washers, foreign coins, bobby pins, bingo markers, chewing gum and slugs into the machine in an effort to get free time on the meter. The only thing accomplished by inserting these objects is an attempt to jam the meter.

Many of the parking meters in use in the City of Asbury Park were purchased in 1940. They are being replaced at the rate of one hundred meters each year. The new meters can be opened only by a collection device which releases the coins into a receptacle. Two thirds of the parking meters in use throughout the city are ten-cents-an-hour meters, one third are five-cents-an-hour.

The relocation of the meters, installation of pipe standards to support them, installation of new timing devices when the meter time is changed are all handled by the maintenance crew. All members of the maintenance crew are required to take special training with the Duncan Parking Meter Div., 835 North Wood St., Chicago 22. New meters are usually installed by the parking-meter company. City meter maintenance men also handle the maintenance of meters on parking lots which are operated by the Parking Authority.

The results:

1. Our Police Department has been reorganized.

2. Our meter department has been put under the direct supervision of the city treasurer.

3. Meter collections in 1956 were $135,656.75. Meter collections in 1959 were $238,653.39. The difference of $102,996.64 is an annual increase of 70% and represents more than $4 per thousand on the tax rate. ◄◄

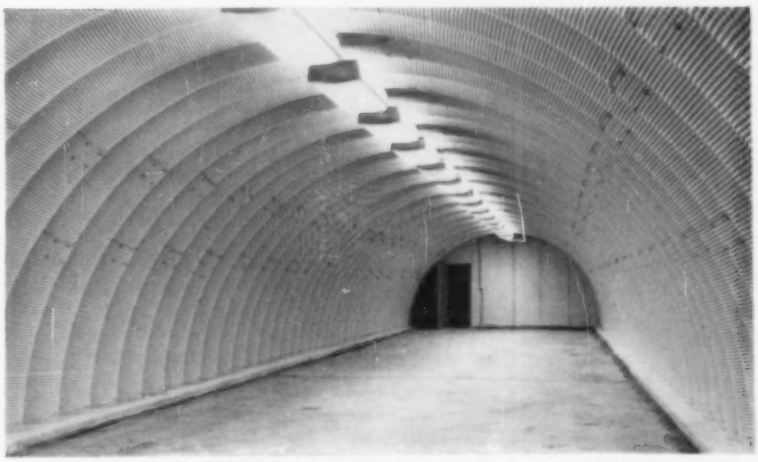
Low-Cost Fallout Shelter Can Protect 150 People

A low-cost community fallout shelter is now available for inspection at the regional headquarters of the U. S. Office of Civil and Defense Mobilization, Thomasville, Ga.

The structure is capable of housing up to 150 people. It was subjected to full-scale radiation tests by scientists under the direction of the Atomic Energy Commission. These findings will be made public upon completion of their official report.

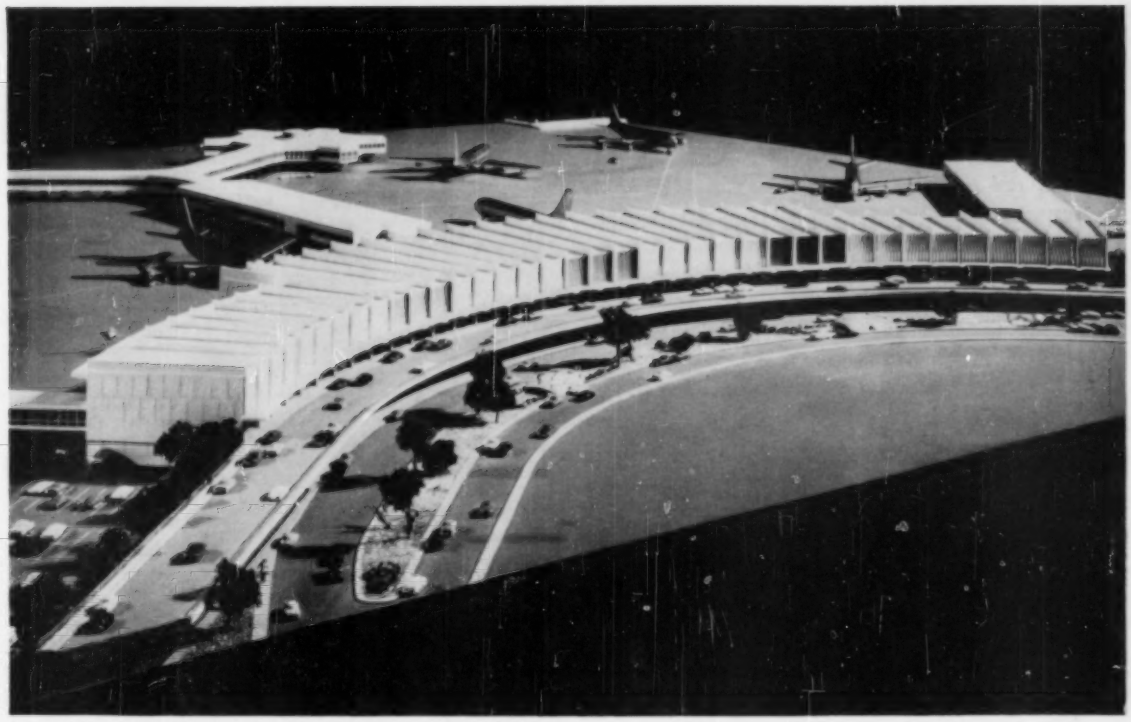
The shelter is 20 feet wide, 100 feet long and ten feet high. It is part of a line of pre-engineered and packaged fallout shelters made of two-foot-wide sheets of corrugated steel, vinyl-coated on the interior side. The steel sheets are corrugated and curved to form self-supporting arches secured by simple nut and bolt fasteners. The shelter was fabricated by Wonder Building Corporation, 30 N. LaSalle St., Chicago 2, Ill.

OCDM Director Leo A. Hoegh describes it as fallout protection that every community, large or small, can afford to install. Local governments may find the shelter highly adaptable as an inexpensive emergency operations center, protected against radioactive fallout. ◄◄



This interior view reveals the arch-type trussless shell.

The exterior view shows the protected front entrance. Two feet of earth cover the shelter.



The circular form of the new building will add esthetic interest and provide efficiency in operation.

San Francisco Airport Terminal Will Use Curved Layout

By **WILLIAM SIMONS**, Director of Public Service

The new design for the San Francisco International Airport's South Terminal will be a long, low, curved building, functioning on a two-level plan. It will feature exposed plaster-covered structural steel ribs and walls of solid panels spaced by narrow slots of clear and colored glass.

The terminal will be the first element in a master plan for the airport adopted by the San Francisco Public Utilities Commission in February 1959. The plan provides for a central multi-level parking structure surrounded on three sides by three terminals—the existing one on the east and new buildings at the north and south.

The curved building design was dictated by the traffic flow which suggested the circular shape of the master plan. It also aids in the quick identification of airline offices. Passengers arriving by roadway on the inside of the curve can see ahead along the entire length of the 800-foot-long building and immediately spot the airline they seek.

Esthetically, the interior will appear more intimate from any point within the curve, since passengers will see only a part of the structure instead of getting a long, narrow, tunnel-like view. In addition, the curve will give the interior and exterior screen-like walls an ever-changing appearance, taking away from the monotony of a straight structure.

The two-level function of the terminal, in which departing passengers are handled on the upper level and arriving passengers on the lower level, was used for its efficiency in separating traffic and to tie in with the existing terminal building, concourses and piers.

The structure will have telescoping passenger loading devices presently in operation at San Francisco International Airport. The design and master plan represents the work of Welton Becket and Associates, architect-engineers, Los Angeles, Calif.

The need for additional terminal space has been emphasized by passenger increases since the central terminal was opened in 1954. At that time, 2,879,366 passengers enplaned and deplaned at the airport. By the last fiscal year, 1959-60, this total had shown an explosive increase to 5,017,479. By 1970 more than 8,400,000 passengers will probably use the airport. ◄◄

Soft Spots in City Planning Structures

. . . show at the same time the strength and progress of the nation's urban planning programs

Slightly less than 60% of the municipal planning work now being performed across the nation is being directed by professional city planners. Less than 60% of the planning work includes a study of housing in deteriorating areas. Only half of the cities take part in the planning that reaches beyond their municipal boundaries. Only 60% have topographic maps and some 70% have land-use maps. This is based on a survey of 1,048 cities across the nation in 48 states conducted by the editorial staff of THE AMERICAN CITY.

City Planning Practices

STATE	Cities responding	% with a planning agency	% legally constituted	% independent boards	% separate departments	% division of another department	% include mayor or city manager	% include city engineer	% directed by professional planner	% directed by department head who does other work	% directed by other
Alabama	13	93	100	85			100	25	77	15	7
Alaska	1	100	100	100					100		
Arizona	7	88	100	72	14		14	28	57	14	
Arkansas	9	100	89	88	22		45	22	45		
California	126	100	99	85	20	6	5.5	26	73	16	6
Colorado	15	100	100	73	13		73	13	47		
Connecticut	30	100	100	60			62	53	77	7	
Florida	24	92	96	83	21	30	50	42	58	25	4
Georgia	20	90	85	85	5	5	25	15	70	17	
Idaho	6	100	100	66			83	83	17	17	17
Illinois	74	89	81	63	20		50	20	50	11	6
Indiana	20	100	100	85	25		25	65	50	15	
Iowa	19	95	89	79	26	6	5	10	58	16	
Kansas	21	91	91	91	5		33	10	38	5	23
Kentucky	12	100	100	83	8		92	100	50	25	8
Louisiana	7	100	100	71	14				86		14
Maine	8	100	100	100			25	12	63	12	12
Maryland	9	45	33	33	22	11			33		
Massachusetts	37	97	92	73	16		8	16	51	10	5
Michigan	55	93	94	89	21		67	29	72	7	9
Minnesota	22	100	100	91	14		59	45	68	9	9
Mississippi	8	88	50	88			12	50	37	37	12
Missouri	17	94	94	82	52		59	54	47	24	6
Montana	3	100	100	66	33			33	100		
Nebraska	4	100	100	75	25		25	25	25		25
Nevada	5	100	100	80	20		40	60	60	20	20
New Hampshire	7	100	100	100	14		86	57	57		
New Jersey	67	93	89	80	10		84	66	45	10	8
New Mexico	7	86	86	71	14		29	29	43	14	
New York	51	92	86	84	4		20	31	57	10	10
North Carolina	21	100	100	81	24		52	38	57	5	
North Dakota	5	100	100	100			100	100	80	20	20
Ohio	53	98	95	89	13		60	22	38	25	9
Oklahoma	17	88	76	88	6		53	29	70	6	12
Oregon	10	100	100	100			80	80	60	10	10
Pennsylvania	66	88	76	79	15		11	18	52	15	1
Rhode Island	11	100	100	73	27		55	46	82		
South Carolina	8	100	100	75	38		38		75	12	
South Dakota	4	75	50	75			50	50		75	
Tennessee	9	100	100	78	33		77	22	89		
Texas	56	87	80	80	11		14	21	43	29	
Utah	4	100	100	75	25		50	50	75	25	
Vermont	3	33	33	33			33		33		
Virginia	20	100	100	80	15		65	5	50	10	10
Washington	15	100	100	93	40		13	47	60	13	7
West Virginia	7	100	100	86	14		100	29	71	29	
Wisconsin	33	100	100	79	11		55	73	42	36	
Wyoming	2	100	100	100					50	50	50
Total	1048	....	....	....	....	....	....	....	....	....	....
Average	22	94	91	80	....	....	46	37	58	18	....

These results, of course, merit some further explanation. For example, a number of municipalities responding stated that they have no deteriorating neighborhoods and some of them may be right. Three cities in Illinois report that they have no undeveloped areas.

Moreover, the lack of regional planning, beyond the limits of the municipality, does not reflect lack of interest in it. Cities in well over half the states expressed their desire for planning on a wider basis. In California, a number of communities report that they do not officially participate in county or regional planning, but that, unofficially, through such groups as the League of California Cities, mayors' conferences and similar agencies, they do.

Furthermore, regional planning, where practiced, has not been consistently successful. A number of counties in California have regional planning programs. One of the responding cities affected by this planning reports that "The coordination of planning activities in our county as practiced by the regional planning commission is quite ineffective in certain categories and therefore has limited value."

Nevertheless, regional planning grows, even without regional planning agencies. Richmond, Calif., reports excellent liaison with the western portion of San Francisco, but San Francisco itself has no regional planning commission. In Iowa, state law does not provide for regional planning but more than half of those reporting do participate in planning outside their legal boundaries, unofficially.

Where enabling legislation does exist, it provides for planning beyond the city limits for distances ranging from 1½ to 5 miles. A number of states have provided this legislation.

In some cities two persons share the direction of the planning commission. In some cases each may have a separate department under his direction, in addition to directing the work of the planning commission.

More than 80% of the planning commissions approve plans for new streets in subdivisions and elsewhere. In Massachusetts, this is required by the subdivision-control law.

Across the Nation

% map of dedicated parks, streets, etc.	% required to approve plans for new streets	% study of housing in deteriorating areas	% with master plan	% with zoning board	% take part in county or regional planning	% have topographic maps	% have land use studies	% have recent air photos	% that are successful
93	85	62	85	77	15	22	85	61	100
100	100		100	100	100	100	100	100	100
100	85	28	71	86	57	71	71	57	50
100	78	33	66	73	33	44	56	33	55
99	95	55	78	26	77	69	84	93	73
100	100	27	87	100	73	87	87	87	47
100	83	50	100	90	70	70	70	66	66
88	88	58	54	92	42	54	58	54	54
85	85	95	80	80	55	65	55	55	55
100	66	33	66	82	50	83	50	66	50
70	58	50	65	75	41	33	50	39	36
85	85	65	90	95	60	47	60	55	55
84	90	68	83	90	55	63	74	67	74
95	71	28	38	62	19	53	57	67	53
84	75	83	75	100	50	66	66	75	58
86	86	100	100	86	72	43	100	85	71
87	100	75	100	100	25	75	75	88	25
44	45	33	33	45	45	33	22	22	22
51	73	54	49	97	30	51	62	68	65
96	89	67	80	91	62	49	82	80	69
91	86	59	73	60	36	73	77	86	64
62	63	63	63	63	37	62	100	100	63
94	82	88	83	94	40	47	59	65	65
100	66	66	100	100	66	66	66	33	66
75	100	25	25	50	75	50	50	25	75
80	100	60	100	60	100	100	100	100	100
28	86	43	71	86		86	86	57	57
82	76	53	72	90	49	52	71	49	73
86	85	57	100	72	29	85	85	43	71
76	79	63	67	86	35	53	65	59	55
90	95	81	90	91	52	67	72	57	66
100	100	100	100	100	100	100	100	80	80
87	94	49	72	91	61	49	64	49	57
82	82	41	58	71	29	53	59	35	59
100	100	60	100	70	70	80	80	80	80
82	71	55	79	77	52	49	56	48	47
73	73	82	72	91	37	45	73	45	73
88	75	64	88	50	52	38	63	38	63
75	75	25	75	75	25	75	75	75	75
89	89	55	100	78	66	45	77	89	66
86	71	53	68	80	25	59	52	55	54
100	100	75	75	100	50	100	75	100	75
33	33	33	33	33	33	33	33	33	33
90	85	80	90	100	40	85	85	90	80
93	93	54	82	66	52	67	94	87	73
100	86	87	100	100	43	71	71	71	43
82	94	39	66	88	51	76	68	70	70
100	100		100	100		50	100	100	50
....	....	....	....	....	....	....	....	....	....
85	83	56	77	81	50	62	71	65	62

Independent Boards

The study disclosed that the independent planning board or commission is by far the most popular method of establishing a municipal planning program. Approximately 80% of the cities surveyed used this method; the remainder made the planning work a separate department within the municipal organization, or, in some cases, made it a division within another department.

Even where the planning board is independent, nearly half include the mayor or city manager and well over a third include the city engineer. Many include other career city officials. These most commonly are city clerks, city attorneys, building inspectors, traffic, park and recreation directors.

Needs Pinpointed

The survey uncovered areas where planning is needed. For example, some 15% of the cities surveyed do not have an official map showing dedicated streets, parks, and other similar data. Roughly one quarter do not have a master plan. As memtioned above, only about half have any study of housing in deteriorating areas of their communities. Nearly 30% have no land-use studies; 35% have no air photos of their cities. And even more important, only

about 62% are confident that their planning work has been successful.

Nevertheless one can appraise best the value of good community planning by looking at a state where the growth has been strong and vigorous and where, at the same time, planners have been active. California, is such a state. And its cities have written inspiring testimonials to the value of good city planning.

Bakersfield, for example, has used its planning program to aid sound subdivision control during a period of rapid growth. In Brawley, planning has permitted business expansion that otherwise would have become impossible. In Fresno, planning on a regional basis, involving the county and two adjacent cities, has resulted in a metropolitan airport and highway plan; locally it has produced two redevelopment projects and a plan for revitalizing the central business district. Glendora's planning program has checked shoestring commercial developments by annexing along major highways. Hanford has enjoyed cooperative planning with Kings County and three other smaller cities. Long Beach's planners have helped establish shopping centers for regional and neighborhood needs; they also have helped Long Beach locate major and secondary highways, schools and parks, playgrounds and many other needed facilities in strategic spots. Menlo Park has established a zoning district for "senior citizens," believed to be the first in the nation. Petaluma plans for a 48-square-mile area and is enjoying city-county cooperation in plans for parks, civic improvement, school locations, roads, subdivisions.

Future

Obviously cities plan, whether they do so intentionally or not. The lack of a plan is a plan, although not a commendable one. The fact that cities *desire* to plan on a regional or area-wide basis, and are attempting to do so, even against difficulties, is encouraging. It demonstrates that planning will give added leadership to vigorous urban areas and create the progress needed today. ◄◄

Modern Transit Proposed for Los Angeles

A rapid transit system "truly unique in its ability to provide a fast, comfortable, quiet and convenient ride" was recommended recently to the Los Angeles Metropolitan Transit Authority. The American Transit Association lists the following points made to the Transit Authority by its consulting engineers, Daniel, Mann, Johnson and Mendenhall:

- **That the most economical system would utilize 54-seat, air-conditioned, light-weight cars, electrically propelled on pneumatic rubber tires on concrete tracks, operating in trains and running for the greater part along overhead structures, with some of the mileage at grade along existing rights-of-way.**
- **That the initial system total 74.9 miles in length and consist of four lines extending out from the Los Angeles central business district to Covina, Santa Monica, Long Beach and Reseda.**
- **That this system would serve passengers at twice the speed of the U. S. transit average and at 40% faster speeds than the Los Angeles peak-hour freeway driving average.**
- **That construction of this system —"one of the first truly *rapid* transit systems in the world" — would cost $529,700,000.**
- **That the doubling of this system would be required "probably within 20 years." This would make a 150-mile system with four additional lines going out from central Los Angeles to Santa Ana, Inglewood, Pasadena and to San Fernando via Glendale and Burbank.**

After an hour-long presentation of engineering recommendations and maps, C. M. Gilliss, LAMTA executive director, outlined the next steps to be taken.

"We want first to give the public and the Authority time to review and assimilate the report," Mr. Gilliss said. "Using whatever time it may take, we want to get the opinions of everyone who has an interest in transportation in the metropolitan area — government interest, business interest, commuter's interest."

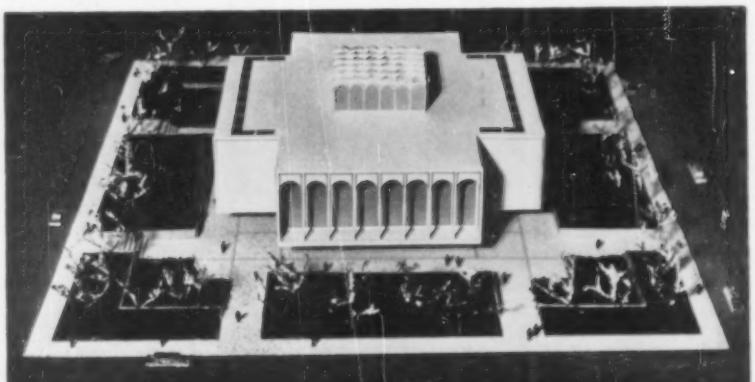
Irvan F. Mendenhall, president of the engineering firm offered the word "Metro" as a name for the system. "Metro," he said, "is conceived as using the fastest and lightest-weight transit vehicle in the United States and yet it would be a very quiet system and one which would combine a high degree of operational safety with its high-speed capacity."

It would reach speeds as great as 80 miles an hour between stations, which are planned to average one mile apart, with a 20-second station stop.

The Metro system would serve passengers during peak hours with average speeds of from 35 to 40 miles per hour, including station stops.

This compares with the Los Angeles peak-hour-average freeway driving speed of 25 miles per hour, and with the usual U. S. mass transit average speed of 18 miles per-hour. ◄◄

Municipal Building Design



A design for a proposed municipal building for Houston, Tex., won an architectural award in a student architectural design competition sponsored by the Tar Products Division of Koppers Company, Inc., Pittsburgh, Pa. This was one of the six winners, giving W. C. Widdowson, a student at the University of Houston, a $1,000 scholarship.

Golf Course Doubles as Tree Nursery

. . . enabling Milwaukee, Wis., to supply parks and streets with strong, mature trees

By **ROBERT E. LEE**
Park District Supervisor
Milwaukee County Park Commission

Trees of this size move very well.

Park and forestry employees know well how easily damaged many small-caliper trees are that are planted in open areas or along city streets. Staking these vulnerable trees fails to protect them from damage. Only by using larger, sturdier trees is this damage eliminated. In addition larger trees harmonize better with their surroundings.

But to buy larger, nursery-grown trees is costly and to use native stock is not very satisfactory. However, we have found that we can grow our own larger trees without additional land. We use our golf courses, planting small trees in such locations as roughs, separations between fairways and screen plantings along roads. Because these trees have been root-pruned they will develop compact root systems which will insure not only a high survival rate but also a vigorous growth.

This may seem like an expensive and involved program. However, we find with good planning the average cost per tree is relatively low. On the golf course we find that young trees can grow safely without damage. Planting trees in their final home provides work for employees during the winter season, which is usually a slack one.

The usual procedure is for the Landscape Architect to select the trees to be moved in late fall. They are marked with a red tag on the north side for uniformity and ease of locating. The tag lists necessary information, such as size of rootball desired, a distinguishing number to identify the particular tree, and/or the location to which a particular tree will be moved.

Next, a work crew covers the ground around the tagged trees with marsh hay or manure to prevent freezing of the soil until the trees are dug. After digging, the tree ball is permitted to freeze, and is kept frozen until it is moved by covering the root ball with hay or manure.

A stock pile of topsoil for planting is also prepared in the fall. It is located centrally and is covered with hay or manure to keep it unfrozen until used. We use a Bucyrus-Erie Hydrocrane and several dump trucks to load the topsoil and deliver it to the tree-planting site. This site has previously been marked with stakes to show where trees are to go. The stakes often carry other information such as size of hole to be dug. The Hydrocrane digs the tree holes and the hay is used to cover the topsoil until the trees are brought to the site.

Any soil left after the planting is used to fill the holes at the golf course from which trees were taken. Milwaukee uses one rocker-type truck-mounted tree mover and two sizes of trailer. When several smaller trees are to be moved we use a low-bed machinery trailer pulled by a winch truck which is equipped with a pole-setting derrick used to load and unload the trees.

Pruning the trees is usually done between the time of selection and the moving date. Of course, young trees should be planted to replace those that are taken from the golf course.

The movement of vehicles on the golf course must be confined to the roughs as much as possible. Marking the perimeter of greens and tees with flags or tall stakes helps accomplish this.

This type of program has been in operation in the Milwaukee County Park System for many years. It was originally conceived by and was under the direction of the late Alfred Boerner, and is being continued under the direction of Howard Gregg, the present General Manager of Parks. ◄◄

Pre-chlorination takes place in the entrance flume to the 177,000,000-gallon contact basin (formerly the pre-sedimentation basin). The old aeration steps may be eliminated to prevent chlorine loss which now occurs.

Two-Step Pre-Treatment Plant

. . . and double-deck flocculation-settling are featured in Philadelphia's new semi-automatic Queen Lane water-purification plant

In just one year Philadelphia dedicated two semi-automatic water purification plants. Torresdale was the first, officially opened September 29, 1959, and Queen Lane was next, dedicated on September 29, 1960 by Mayor Richardson Dilworth. Unlike Torresdale, where a new plant was built alongside an old installation, Queen Lane represents the complete transformation and modernization of a facility opened in 1909.

Modernization of the purification facilities represents only two parts of the three-part program at Queen Lane. Still to come is the high service pumping station.

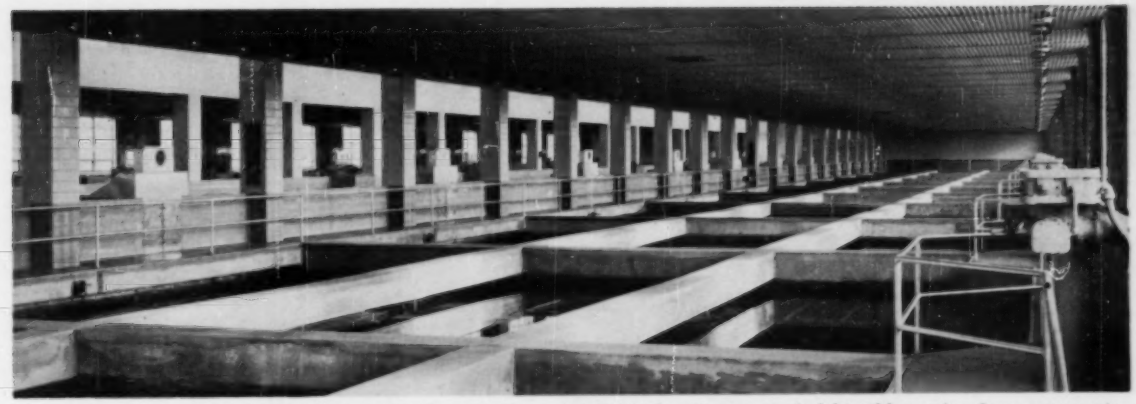
The completed phases of the program consist of a modern pre-treatment building, opened in 1955 after an investment of $5 million, and the new $5.5-million filter building consisting of 40 rapid sand filters, each rated at 3 mgd on the design basis of two gallons per minute per square foot of filter area. The original plant was of the slow sand filter type, with filters spread over approximately 15 acres. Some of the pre-filters, located in the main building, were converted to rapid sand in 1923. The new filter building was constructed on the foundations of this earlier building and its new rapid sand filters occupy the sites of the earlier rapid sand filters and pre-filters.

Pre-Treatment

Pre-treatment takes place in two steps at the remodeled plant. Water pumped from the Schuylkill River first flows through a 177,000,000-gallon pre-sedimentation basin, now more accurately called a contact basin, before entering the recently constructed pre-treatment facilities.

At the entrance to the basin four existing Wallace & Tiernan evaporators and three 8,000-pound-per-day Fischer & Porter chlorinators add chlorine to the raw water. Carbon slurry facilities are now being installed at the pre-chemical building to add carbon to the water at this point also. However, with "break-point" chlorination as practiced at the plant, there should be few taste and odor problems, requiring the use of activated carbon only in emergencies.

At the opposite side of the basin the water enters an eight-foot-diameter conduit through a newly con-



These new filters were constructed in locations occupied by older units. Step construction permitted the operation of some of the old units while new ones were built.

structed intake structure which conveys it to the pre-treatment building. Here four 48-inch cast-iron lines convey the water to the four separate pre-treatment units.

Each unit consists of a flash-mixing basin and a double-deck flocculation-sedimentation tank. The water enters the upper deck of the tanks, flows through the flocculation section into the sedimentation portion, and at the far end drops down to the lower deck and flows to the outlet at the opposite end. Equipment consists of Link-Belt mixers, flocculators and straight-line sludge collectors, the latter being installed in the upper portion of the sedimentation section only. A combination of Simplex controls and Limitorque-controlled butterfly valves in the 48-inch influent lines regulate the entry of water into each pre-treatment unit in accordance with the elevation of the water in each unit. As the water level drops, the valve opens; and as the water level rises above the pre-set point, the valve closes.

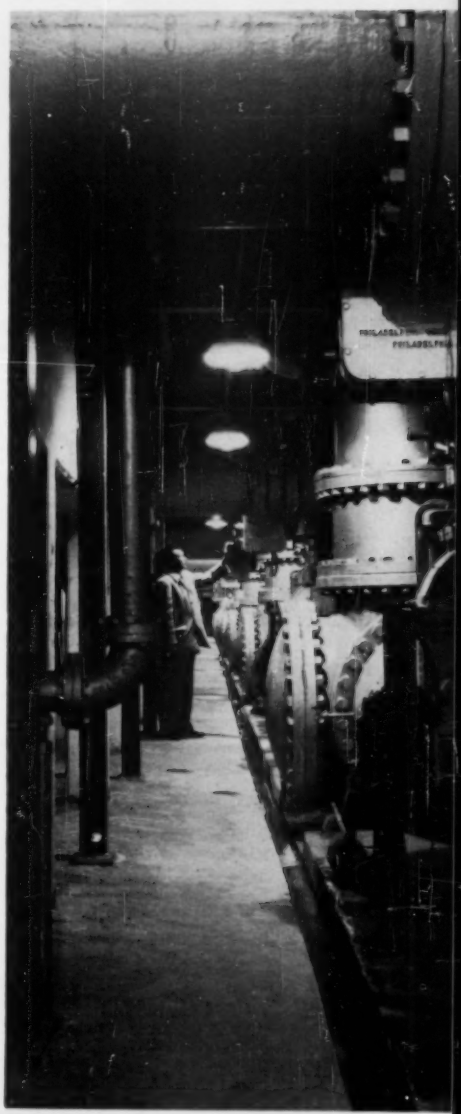
Alum and chlorine are added to the water in the 48-inch influent lines while lime and carbon (when needed) are added in the rapid-mix basins. As previously mentioned, the facilities for adding carbon are being moved to the pre-chemical building.

Eight steel tanks are connected to and supply the feeders with alum and lime, four tanks being used for each chemical. Each tank holds the equivalent of 45,000 pounds of lime. They are filled by means of a Brady vacuum system. Dry chemical feed equipment consists of eight Omega gravimetric feeders (for lime and alum) and four loss-of-weight units (for carbon).

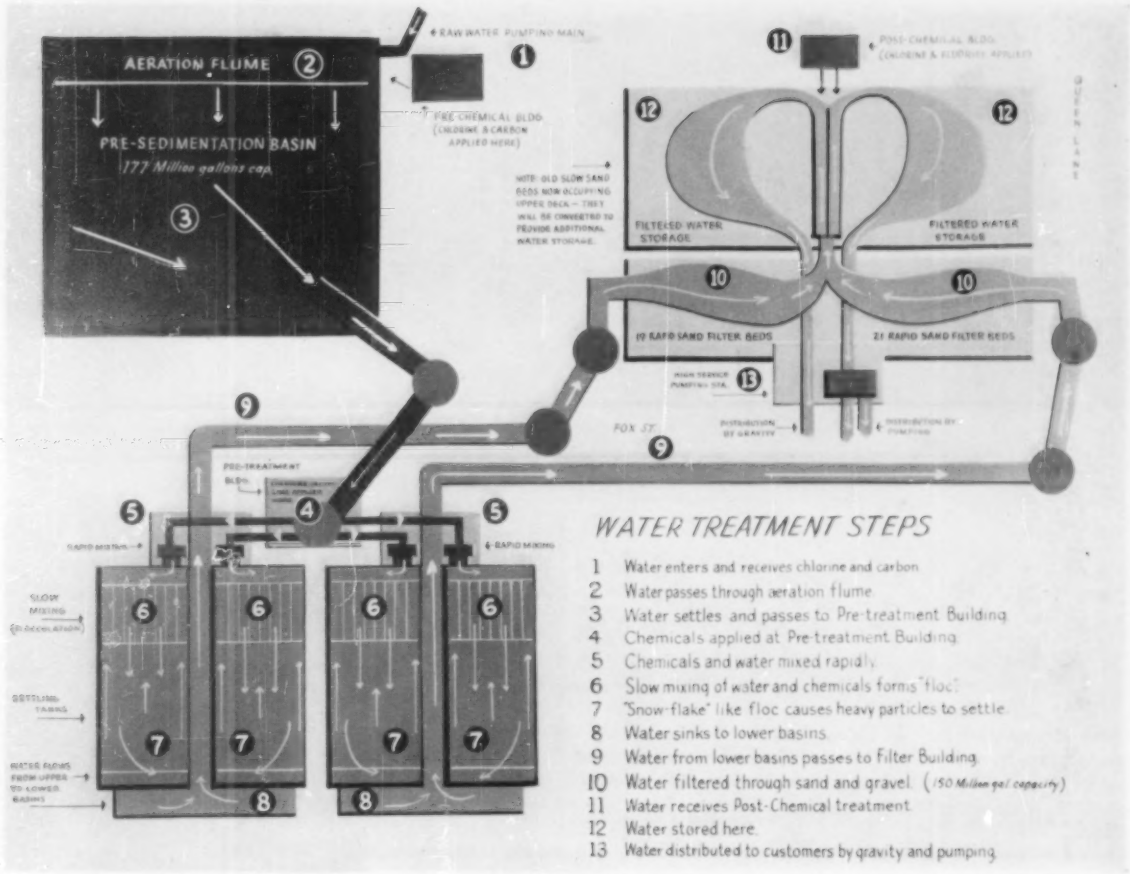
Chlorine may be added as the water enters and leaves the pre-treatment facility. Equipment includes five 6,000-pound per-day W&T air-operated, automatically paced, master chlorinators for pre-chlorination and three vacuum units of 400-pound-per-day capacity for post-chlorination. The ton containers are located on Howe scales two floors below the feeder room but the scales have dual dials, one on the platform floor and one in the feeder room for each scale. The pre-chlorinators are used in case something goes wrong with chlorination at the plant intake while the post-chlorinators operate when additional chlorine is needed.

Forty Filters

Two 11-foot-diameter conduits convey water from the pre-treatment facility to the filter building. Although each line serves one half of the plant, they are interconnected via four 48-inch valves. One section of the filter building contains 19 filters while the other section has 21 filters, all installed by the Roberts Filter Manufacturing Co. Equipment includes Leopold bottoms, Palmer surface washers, and Builders-Prov-



Dehumidifying equipment keeps the pipe gallery dry; this makes for better instrument operation and improved maintenance.


AERATION FLUME
PRE-SEDIMENTATION BASIN
177 Million gallons cap.
RAW WATER PUMPING MAIN
PRE-CHEMICAL BLDG. (CHLORINE & CARBON APPLIED HERE)
FILTERED WATER STORAGE
FILTERED WATER STORAGE
12 RAPID SAND FILTER BEDS
21 RAPID SAND FILTER BEDS
FOX ST.
RAPID MIXING
SLOW MIXING
SETTLING TANKS
WATER FLOWS FROM UPPER TO LOWER BASINS
WATER TREATMENT STEPS
1 Water enters and receives chlorine and carbon.
2 Water passes through aeration flume.
3 Water settles and passes to Pre-treatment Building.
4 Chemicals applied at Pre-treatment Building.
5 Chemicals and water mixed rapidly.
6 Slow mixing of water and chemicals forms "floc."
7 "Snow-flake" like floc causes heavy particles to settle.
8 Water sinks to lower basins.
9 Water from lower basins passes to Filter Building.
10 Water filtered through sand and gravel. (150 Million gal capacity)
11 Water receives Post-Chemical treatment.
12 Water stored here.
13 Water distributed to customers by gravity and pumping.

Flow diagram of Queen Lane Plant. Note division of units in pre-treatment and filtration facilities. Four 48-inch valves interconnect the two conduits carrying water to the filtration building.

idence operating tables, controls and rate controllers. Each half of the filter plant may be controlled by a master control panel. Control may be manual or automatic, similar to that employed in the Torresdale Plant (THE AMERICAN CITY, October 1960, p. 106).

Filter Rates

At the present, the filter rates are being controlled according to the level of the water in the clear well. Backwash is also automatic as in the Torresdale plant, requiring the operator to push only one button to start the backwash cycle.

Filter control valves except rate controls on one half of the plant are Allis-Chalmers butterfly valves, with A. P. Smith gate valves used on the other half. All are equipped with Limitorque controls. Although rated at 120 mgd, plant output can be increased to a maximum of 150 mgd by increasing the filter rate above the standard design rate. Hydraulic considerations which prevailed in the old plant limit capacity to 150 mgd.

Filtered water flows through two conduits to the far end of the old sand filters, where chlorine and hydrofluosilicic acid are added, and then to the clearwells located under the existing slow sand filters. These have a total capacity of 40 million gallons. Plans call for the removal of all material from the slow sand filters so they may be used for additional filtered water storage. From here the water flows into the distribution system. About 15% of the plant output is pumped into the high service system, with the balance of the output leaving the plant under gravity flow.

The Roberts Filter Manufacturing Co., holder of the complete filter-equipment and piping contract amounting to approximately $2,000,000, was responsible for maintaining production during reconstruction. They employed step-construction with a minimum of 50% of the rapid sand filters in operation. This added to the difficulties and required temporary lines, bulkheads and equipment settings, plus protection of facilities remaining in service.

One item of interest concerned the replacement of switchgear and heating boilers. With the changeover scheduled for summer, the plans called for removing the old boilers, installing the new switchgear in their place, and then removing the old switchgear and putting in the new boilers.

However, the work was finally done during the winter and required the temporary installation of one new boiler until the changeover was complete and one new boiler had been placed in its permanent location and put into service.

Walter A. Antrim of Philadelphia was the architect and Morris A. Knowles, Inc., of Pittsburgh served as consulting engineers. Engineers of the Philadelphia Water Department exercised general supervision over the project and supervised the construction contracts. ◄◄

This is the front or main entrance of the Hamilton County Police headquarters; at the right is the communications center.

County Police Like It

Hamilton County, Ohio, police have moved from downtown Cincinnati to their new building in the center of the county and adjacent to the proposed circumferential highway, a cross-county highway which will provide rapid access to all sections of the county.

This building brings together the formerly separated departments of the police, the communications center, and the maintenance garage. The design of the building effectively expresses these three functions; the large solid mass of the windowless garage, lighted naturally by plastic skylights and mechanically ventilated; the lower wing of the police headquarters, housing offices, cells, briefing room, lockers, and toilet rooms; and at a right angle to this wing another low wing containing the communications center with its own facilities and connected by a glass-walled passage to the police offices.

The force has six officers, six detectives, and 36 men with 30 cruisers covering 515 square miles. They operate in three shifts of eight hours each, each man having an assigned area. He does not leave this area until his "relief" radios that he has arrived in the sector.

Check-in

Before going on duty, each patrolman reports to the "check-in" office. This office is located adjacent to the garage and has a large window overlooking the garage so that the check-in officer may observe cruisers arriving and leaving. Also, male and female detention cells are located directly off this room for ease of supervision by the officer on duty.

The garage is lighted naturally by means of plastic skylights.

Teletype reports from both the county communications center as well as the Cincinnati Police Department are brought here.

Briefing Room

After "checking-in" the patrolmen coming on duty proceed to the glass-walled briefing room, which accommodates 35 persons. In this room the men are brought up to date on the incidents of the last 16 hours and alerted to events which may affect their tour of duty.

The police are particularly proud of their new interrogation room. In one wall a large "one-way-view" window enables the prisoner to be observed from an adjoining office without seeing the observer. The polygraph (lie detector) and an instrument for recording conversations are in this room.

A basement assembly room seating 100 persons has been provided, primarily for use by the Hamilton County Police Academy under the direction of Raymond Clift.

The Communications Center, under the direction of Maurice Wesselmann, Jr., in addition to maintaining constant radio contact with the police cruisers, provides another vital service.

Any resident in any of the villages and cities of the county may call the communications center for fire or police aid. In the case of fire, the dispatcher, by pressing a decoder button, activates the siren at the volunteer fire department's building in that village or city. As soon as the fire department is "on the air," it is

informed of the location of the fire by the communications center. The police, too, of the various villages and cities maintain constant contact except for those departments having their own radio center. All telephone conversations are recorded, using one-half-hour-long recording belts. In 1959, 5,114 of these belts were used.

The new 300-foot-high, five-antenna radio tower can receive radio-transmissions from California, as well as point-to-point transmissions within the State of Ohio.

The maintenance garage can accommodate 30 automobiles and can be easily expanded if this becomes necessary. An automatic car wash has helped to keep the cars clean.

The building construction of the headquarters is brick and concrete block masonry load bearing walls and 2x4-inch structural steel columns which are intended to serve as window mullions and roof supports.

All glass areas opening to the south are glazed with a glare-reducing "gray" glass in order to reduce the air conditioning load. In addition, the architects located trees so that they would shade the south walls of the building, and the large garage unit was positioned to block off the western sun.

Captain Emil Otting heads the police, whose headquarters were designed by Glaser & Myers, 5945 Ridge Ave., Cincinnati 13, Ohio. ◄◄

Doing Something for Commuters

Philadelphia, Pa., a pioneer in attacking the nationwide commuter transportation headache, has authorized an agreement with the Passenger Service Improvement Corp., a new non-profit body to administer and maintain commuter transportation.

The city will purchase the services of PSIC, which in turn will contract with the Pennsylvania and Reading railroads, actually operating the commuter rail system. The Board of Directors of the corporation includes representatives of the public, the two railroads, and the Railway Labor Executives Association. A bill appropriates $250,000 to pay for PSIC services this year.

The corporation will take over an existing city contract with the Reading known as "Operation Northeast," and maintain and expand the cooperative arrangement with both railroads known as "Operation Northwest."

If revenues are less than expenses, the corporation will make up the difference. Conversely, any excess of revenues over expenses will be used solely for making further improvements in service or facilities.

Since the city began taking an active role in solving the commuter problem, almost two years ago, 26 additional runs have been placed in service, and 18 more were added on October 31st, when the railroads return to Eastern Standard Time with revised time-tables.

The Passenger Service Improvement Corp. started a reduced-fare commuter service on the Torresdale and Manayunk lines October 31st. Fares are 30 cents on the Manayunk line and 30 to 50 cents on the Torresdale line, depending on distance. In addition, PSIC is negotiating with PTC to establish feeder service.

The 30-cent fare on the Torresdale line would cover Frankford Junction, Bridesburg and Wissinoming; 40 cents to Tacony and Holmesburg, and 50 cents to Torresdale, where a turn-around would be built.

A request for $250,000 to be paid to PSIC for services to the city are for $160,000 to cover Operation Northwest for the latter half of 1960; $86,700 for the Manayunk and Torresdale lines, and $3,300 for Operation Northeast for the last week of 1960. ◄◄

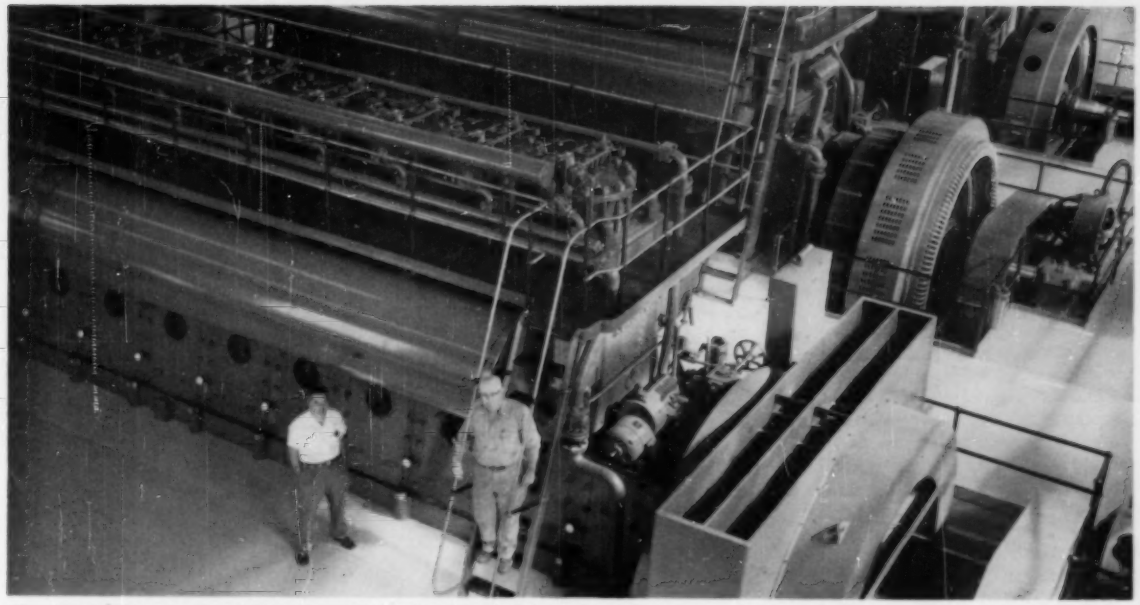
The Ideal City Tractor

The ideal city tractor, says C. W. Hamblin, assistant general manager of St. Paul's Water Department, must be able to lift like a heavyweight but move as light as a feather. It must be able to push with the power of an elephant but move as fast as a scared rabbit. It must be able to load as well as a bulldozer; it must not tear up roadways; and should be able to travel quickly from job to job.

St. Paul's water department recently acquired a rubber-tired tractor with a 6,000-pound carry capacity. The unit is a 1¾-yard Lorain Moto-Loader, model ML-157. It will be used primarily for loading trucks, backfilling and handling pipe.

St. Paul's water department serves a population of over 350,000 and maintains almost 800 miles of mains. The department operates under a board of water commissioners headed by Mrs. D. M. DeCourcy. ◄◄

St. Paul's new tractor-shovel backfills a water-main trench 900 feet long, eight feet wide and seven feet deep.



The author, left, and Production Superintendent Ward Chittenden inspect one of the "new plant" generators.

Two-Plant Power System Under One Roof

By **HOWARD A. BERRY**, General Superintendent
Water and Electric Plant, Carthage, Mo.

At Carthage, Mo., long-range planning and engineering foresight were teamed to provide a "two-plant" electrical power system under one roof. With this system the growth potential is no longer a problem and the reliability factor was almost doubled.

Development of the "two-plant" system began in 1955 with the adoption of a new master plan. At that time the plant, constructed in 1927, was filled to capacity with five generating units. The three original units had been replaced, leaving as the oldest units two 1,500-kw generators installed in 1936 and 1938. These were still of too much value for peak and standby service to justify the cost of replacing them in the space available. The central heat exchanger system used to cool jacket water from all engines was overloaded. Space and arrangement made the addition of exchanger capacity to this system impractical, although the cooling tower had additional raw-water capacity.

The open 2,400-volt station bus could not handle the output of all generating units and there was insufficient cable capacity to transmit this power to the distribution system. Circuit-breaker interrupting capacity was not sufficient to withstand available short circuit currents.

As a result, in planning to meet these problems, system reliability held high priority. In addition, particular attention was given to preventing a complete plant shut-down in the event of trouble.

Extension Built

To provide a solution, we built an extension to the building, providing space for two large diesel-engine generators. Here, we placed one 4,200-kw Nordberg Duafuel unit, leaving space for an additional unit. At the same time, we made every effort to keep the new extension independent of the existing generating plant. Thus we gained dependability of two separate power plants without the additional costs involved in two physically separated plants.

The 4,200-kw unit generates at 13,800 volts, delivered directly to outdoor metal-clad switchgear which in turn feeds existing 13,800-volt distribution. The substation which was formerly used to step up 2,400-volt generation to 13,800 volts is now utilized as a bus-tie transformer, connecting the 13,800-volt outdoor and 2,400-volt indoor buses through circuit breakers on both. This arrangement allows the "old plant's" 2,400-volt generators to feed the 2,400-volt distribution while the "new plant's" 13,800-volt generator feeds the 13,800-volt distribution. In normal operation, however, the systems are tied together, with power flowing through the bus-tie transformer in whichever direction is necessary to balance generation with load. Synchronizing and metering equipment allows connection or disconnection of the bus tie without interruption of service.

The new engine-generator was designed to start and run without external power. To accomplish this with the separately driven scavenging blower, a 13,800/480-volt transformer feeding the blower motor, the main lube-oil pump, and the main

jacket-water pump was tied directly to the generator terminals. For start-up, the exciter field is energized from the station battery. Starting air turns the unit over at about 10 to 13 electrical cycles per second, which develops sufficient voltage to run lube-oil and jacket-water pumps and bring the scavenging blower to adequate air delivery for starting.

As the result of close cooperation between the engine manufacturer and the electrical equipment manufacturer, the starting cycle of the new engine is the smoothest of all the engines in the plant. The key to the success of this system is the response to low voltage, low-frequency power of the exciter, generator, transformer and blower motor. Protection of the engine-generator-transformer is provided by differential relays which shut down the engine and trip the generator field and bus breakers upon fault within the zone of differential protection.

Under normal conditions, the auxiliary lube-oil pump is always started before the engine is turned over in order to assure positive lubrication.

However, experience has shown that these engines can safely be started without prelubrication even though they have been out of service as long as several days.

The jacket water of the new engine is circulated through its own heat exchanger, using an expansion tank reservoir high on the plant wall. Cooling water to the engine and lube-oil heat exchanger is presently supplied from the common header which also furnishes cooling water to the older section of the plant. A new cooling tower scheduled for 1962 will supply the header on the "new-plant" side. It will then be possible to shut down either of the two parallel cooling systems. In addition, city water can be run through the heat exchangers to the storm sewer for emergency cooling.

Separate Exchanger

The older section of the plant was not neglected. The overloaded central heat-exchanger system was relieved by installing a separate exchanger at the largest engine in the old plant with its own circulation pumps and expansion reservoir.

The old open switchgear was replaced with metal-clad gear carrying 3,000-ampere bus and circuit breakers rated at 150 MVA and 2,400 volts. This provided adequate capacity to handle the entire 10,800 kw available from the five 2,400-volt generators. Additional 2,400-volt cables were installed from the new gear to a new riser tower on the distribution system to complete the 2,400-volt supply system. As increasing loads approach the limit of this 2,400-volt supply, instead of increasing the supply, the load will be transferred from the 2,400-volt to the 13,800-volt distribution.

Completion of this program of modernization of the 2,400-volt system and establishing new generating facilities provides Carthage with a foundation for increasing its generating capacity far into the future. Although planning studies and plant history since 1896 indicate doubling of the electrical load on this system about every ten years it will be many years before another such major project will be required.

The dual-fuel diesel units which have a total capacity of 15,000 kilowatts and a firm capacity of 10,800 kilowatts, operated at a fuel cost of 2.9 mills per kilowatt hour for the fiscal year ending June 30, 1959, indicating a solid future for the now thoroughly modernized municipal generating station. Ward Chittenden, Superintendent of Production, is in charge of the plant. ◄◄

Americas' Coats of Arms Displayed

On October 4, 1960, proclaimed "Western Hemisphere Day" by Governor Rockefeller and Mayor Wagner, the Avenue of the Americas Association unveiled 288 shields on the light poles along that avenue in New York City, dedicated to the unity and friendship of the peoples of the hemisphere. This project and festivity were described on page 193 of THE AMERICAN CITY for May 1960.

The shields are of porcelain enamel, three feet in diameter, and bear the coats of arms of all the nations of the western hemisphere (22) and that of the Organization of American States, in full color. These are 12 shields of each nation and 24 of the Organization of American States. They are hung on specially designed brackets about 20 feet above the street. The shields were manufactured by the Municipal Street Sign Co., Inc., 128-20 14th Ave., College Point, L. I. ◄◄

(L. to R.) Mayor Robert F. Wagner of New York City and John H. Mueller, President of the Avenue of the Americas Association unveil coat of arms shield at the ceremony of the American States in Bryant Park.

In most cases repair work consisted of clearing away debris in front of the line of work, . . .

. . . salvaging pipe, cleaning and slipping on the couplings in advance to speed repairs . . .

Donna-damaged Key West pipe line gets . . .

Repairs to 100 Breaks in Four Days

. . . lowering the pipe in place and bolting it to the line.

By the time hurricane Donna ran its course, the United States Navy set machinery in motion to repair the 125-mile water line serving the Florida keys. A plane dispatched to the Bradford, Pa., plant of Dresser Manufacturing Division, Dresser Industries, Inc., flew in one hundred 16-inch Style 38 waterline couplings. Simultaneously, company engineer Matthew McMahon came down from Atlanta, Ga., to place himself at the disposal of Navy Captain W. E. Davidson, the district commander.

Under the supervision of Lt. Commander W. A. Wagner, the only maintenance crew available at the Homestead maintenance supply shop began work at mid-morning on Tuesday following the storm. Additional crews needed for the round-the-clock repair work were recruited from civil service employees and naval personnel. Mr. McMahon rushed back and forth from Key Largo to Marathon, scene of the greatest destruction, giving instruction in the installation of the couplings. Meanwhile, Captain Davidson instituted strict rationing of water shipped from Miami via tanker boats. Personnel remaining in the area as well as the repair crews received typhoid shots as a safety measure.

Pipe Salvaged

Wherever possible the crews recovered pipe from the sea and the land for reuse. Work progressed at four different repair locations at one time, with contact between the various sites and naval headquarters maintained via radio. Since the couplings are identical and interchangeable mechanical joints, installation instructions proved to be so simple that even unskilled recruits quickly learned to assemble the parts and tighten the bolts.

By Friday afternoon, less than four days after starting the job, workmen lowered the last section of pipe into place. One hundred breaks had been repaired, requiring the use of 5,000 feet of pipe and 100 couplings. On Monday morning, following chlorination of the line and testing, naval and civilian personnel once again enjoyed uncontaminated and ration-free water. ◄◄

Temporary underpinning holds up the water line as repair work continues.

All photos courtesy of Dresser Manufacturing Division.

An innovation is the use of parking meters to control boat parking.

Visiting the Park? Use Our Marina!

Metropolitan Beach invites visitors to use their own boats for transportation

By **KENNETH L. HALLENBECK**, Director
Huron-Clinton Metropolitan Authority, Detroit, Mich.

The phenomenal growth of pleasure boating makes it desirable for authorities to consider the problem of accessibility to park and recreational areas from waterways as well as roadways. The Huron-Clinton Metropolitan Authority solved this problem at Metropolitan Beach on Lake St. Clair by establishing a marina solely for the use of transient visitors. This enables thousands of boating enthusiasts in the Detroit area to take advantage of the activities and facilities in this 500-acre park.

To allow as many people as possible to use the marina, the rules limit maximum docking time to 48 hours. The boat wells rent on a first-come, first-served basis with no seasonal reservations accepted. Sixty of the 70 accommodations contain electrical and running water outlets. These rent for 25 cents per hour from 9 a.m. to 8 p.m. The remaining boat wells without utilities lease for ten cents per hour for the same time period with a rate of one dollar for the period, 8 p.m. to 9 a.m. These facilities can accommodate boats up to 60 feet long with an 18-foot beam. A grocery store near the park entrance delivers directly to the boats.

A new feature of the marina is the use of conventional Park-O-Meter parking meters to collect rental fees. Metropolitan Beach is one of the first parks, if not the first, to employ this method of collecting fees. Use of the meters simplifies what might otherwise be a complicated and cumbersome procedure. Each boat well has its own meter and the occupant merely inserts the necessary amount to cover the time he expects to be at the park. To avoid the always annoying problem of overparking and to eliminate the interruption of activities by repeated trips to the boat wells, the meters take from one to 24 quarters.

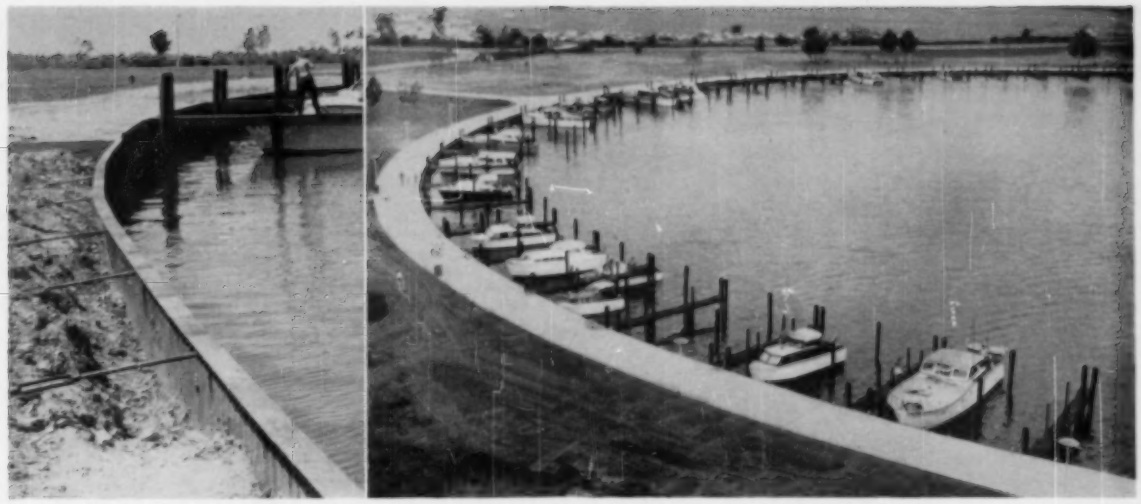
The marina, built on an arc, conforms to the natural line of the shore. It includes beautifully landscaped grounds, a concrete promenade and lighting along the walks with rest-room and shower facilities nearby. Range lights mark the entrance and barrel buoys designate the sides of the channel.

While the number of overnight visitors increases each month, the greatest number of users dock for a few hours or for the day to take advantage of the facilities and activities at the park. Besides swimming these include an 18-hole par-3 golf course, picnicking, roller skating, basketball, archery, waterskiing, volley-ball, dancing under the stars and others.

History

Metropolitan Beach opened in 1951. Even then, the Huron-Clinton Metropolitan Authority noted the growing interest in pleasure boating. A small marina included in the original design consisted of 20 wooden piers and accommodated 12 to 15 boats. The rapid growth of pleasure boating soon made the facility inadequate. The first marina was not protected by sheeting or riprap and underwent constant erosion. Therefore, in 1957, the Authority embarked on a $150,000, three-year program to expand marina facilities.

The Huron-Clinton Metropolitan Authority was created in 1940 to develop and operate recreational facilities in the Detroit metropolitan area consisting of the counties of Livingston, Macomb, Oakland, Washtenaw and Wayne. At the present



At the left, the Armco steel sheet piling wall was connected to deadmen by turnbuckle tie rods; a concrete walk was then poured to the edge of the wall. At the right, the marina was laid out in an arc to conform to the natural shoreline; each dock serves two boats.

time the Authority operates six parks in this five-county area. The Board of Commissioners, the governing body of the Authority, consists of members elected by the Board of Supervisors of each county and two members appointed by the Governor.

The Authority's charter permits the commissioners to levy a tax of not more than one-quarter mill upon each dollar of assessed value of the property of the district. We used this method to finance the marina expansion. All taxes are assessed, levied, collected and returned as county taxes under the general property tax.

The marina expansion plans meet not only the immediate needs but also the needs of the 1960's if, as seems likely, pleasure boating continues its remarkable growth. This accounts for the expansion to 70 boats. Thirty piers make berths for 60 boats, while the steel-sheet piling, extending 100 feet downstream and 200 feet upstream, accommodates ten more.

It required a total of 1,500 feet of Armco seven-gauge interlocking steel-sheet piling to provide erosion protection. The 17-foot-long piling was driven to a minimum penetration of nine feet on a curve with a 690-foot radius. To maintain the alignment of the steel sheeting, 1¼-inch turnbuckle tie rods, spaced on ten-foot centers, connect the sheeting to concrete deadmen located 12 feet behind the wall beneath a sand-gravel fill.

Facilities include separate launching sites for outboard boats. There is no charge for this service. The site consists of an asphalt ramp on a 12% grade, 130 feet wide, which extends seven feet below mean water level. This provides good traction for launching or removing a boat from the water.

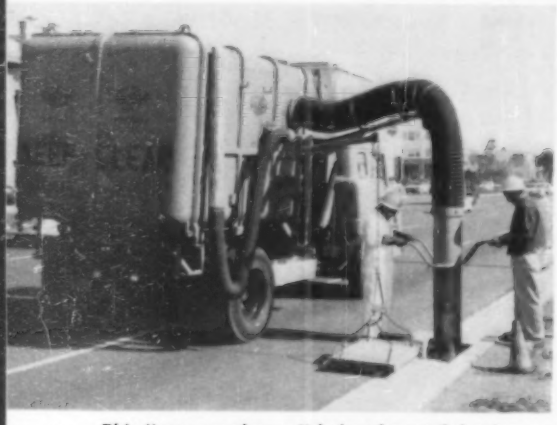
Four finger piers divide the ramp, allowing eight boats to be launched at once. As soon as a boat is launched it must be moved to a dock at either end of the ramp to provide clearance for other boats. These docks are made of Armco steel sheet piling. A special 210-car parking area is restricted to use by cars equipped with boat trailers. We charge for parking in this area from Memorial Day in May through Labor Day in September.

The new marina was opened in May 1960. From opening day through the end of September a total of 6,500 boats used the facility. We expect this number to increase in 1961, since the new marina season will start in April and end in October.

The Authority's objective in building the enlarged marina is to provide the people who use it not only with the necessities but also with the conveniences and services that enable them to enjoy fully the facilities of Metropolitan Beach. The popularity enjoyed by the marina thus far attests to the achievement of this objective. ◄◄

Small boats can be launched from any one of the four piers on this 130-foot-wide ramp.

The tractor-mounted backhoe in the foreground excavates a base failure.



This "vacuum cleaner" helps the catch basins get ready for the next rain at the rate of more than 2,000 per year.

Street-Sewer Maintenance Practices

. . . that produce results, eliminating ailments before they become major problems

By JOHN A. MORIN*
City Engineer
Oakland, Calif.

Maintenance of streets and sewers in Oakland, Calif., is a big—and efficient—business. The 303-man Maintenance Division of the Street and Engineering Department cleans, maintains and repairs streets, sewers, waterways and appurtenant structures as well as controlling weeds, supervising garbage collections and performing other duties.

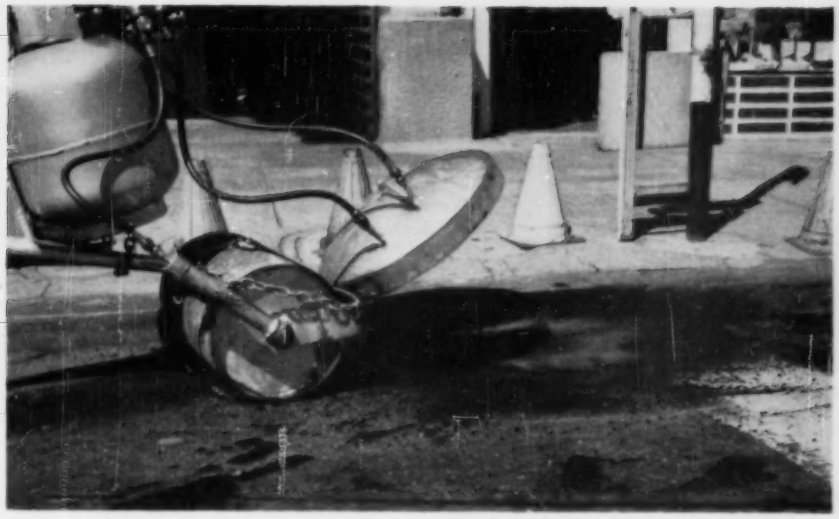
Four maintenance districts, each with its own yard, divide the city into roughly equal sections. A District Maintenance Superintendent oversees the work crews—which vary in size—for current operations.

Street Maintenance

Routine street maintenance required 20,061 tons of asphaltic patch materials in the fiscal year ending in 1960. Our own Materials and Testing Laboratory designs standard and special mixes which are then supplied by a contractor on a yearly bid basis. We do not own or operate an asphalt plant. Standard mixes now include a ¾-inch maximum-size base course, a ½-inch raking mix for the wearing surface and a densely graded ¼-inch mix for thin applications.

A good resurfacing job depends to a large extent on the way the street is prepared for it. Although the resurfacing is done by contract, our own forces do the preparatory work. This consists principally of digging out the base failures and replacing this old material with suitable depth of crusher-run material compacted in place. A base course of asphaltic concrete compacted to the existing surface grade completes this type of preparation. Surface failures are dug out and squared up, the edges primed and the hole filled with base-course asphaltic concrete compacted

* Mr. Morin as Superintendent of Streets and Sewers is ex-officio City Engineer.



The heater-roller irons out a dangerous condition in a cross-walk adjacent to the curb.

to the surface grade. Concrete curbs and gutters are also repaired at this stage. This crew requires the following equipment:

- **1 tractor with backhoe**
- **1 eight-ton tandem road roller**
- **1 air compressor on trailer**
- **1 oil distributor**
- **2 two-yard dump trucks**

Quite often we find that the street to be resurfaced must be planed down before more material can be added. We had to use a heater-planer on slightly more than one-half of the seven miles of streets which we prepared for resurfacing last year. We call for bids once a year on the rental of heater-planers including operator and maintenance. At present Spears Wells furnishes a machine of their manufacture for our use on a daily rental basis.

The planer cuts keys adjacent to the existing concrete gutters and removes distortions that cause poor riding qualities. A city-owned front-end loader picks up the excess material which has been windrowed by the planer. The planer travels at higher speeds while cutting the densely graded sheet asphalt than it does over the larger-sized aggregate mixes. We also use the planer on some streets not scheduled for immediate resurfacing to improve riding qualities and remove oil slicks.

The city owns and operates a small, inexpensive heater-roller called the Rolla Iron and Burner. This machine includes a propane tank providing for six hours of continuous operation. We employ it on

Loading of the waste material follows the heater-planing of the surface.

A 125-cfm Worthington air compressor furnishes power to break out the old sidewalk in one of the 600 operations of this type completed last year.

One of the department's five-man crews uses a Flexible SeweRodeR to clean a sewer.

small areas to remove distortions and correct gutter grades where water ponds. The roller handle tips forward to allow the pan-enclosed flame to heat the asphaltic cement mixture to a workable range. No more than three minutes are required. The roller, which is also heated, then compacts the raked and rejuvenated mix to produce the complete job.

Sewers

Routine cleaning of our sanitary sewers requires the full-time use of four three-man crews. Two of these crews operate Flexible bucket machines to remove sediment and silt from the areas in which grades are flat. Another crew uses a Flexible power-rodding machine to clear stoppages which are usually caused by eucalyptus roots, grease or unusual types of waste. The fourth crew, using an Elgin Eductor or a Good Roads Scavenger, continuously cleans the 1,075 catch basins which are connected to the combination sanitary-storm sewers.

An additional three crews flush and clean sewers within their districts on a routine basis but they spend a part of each day trouble-shooting wherever complaints are received.

Each of these units requires a pickup truck to carry tools and hose. They also tow a two-wheeled trailer containing 400 feet of sewer rods and the accompanying driving tools.

The reconstruction and repair unit consists of three five-man crews. They repair mains, manholes and catch basins and, in emergencies, assist or supplement the trouble-shooters.

These ten crews, totalling 36 men, clean and maintain more than 300 miles of sanitary and combined sewers.

Because sewer failures are being discovered more frequently than available funds can handle, a citizen's committee is now investigating ways and means of financing needed reconstruction. Most of the sewers needing replacement were installed before the turn of the century when materials and procedures were not comparable to those of today. The replacement of the worst of these sewers would enable us to reduce our overall maintenance costs and would result in a system up to modern standards.

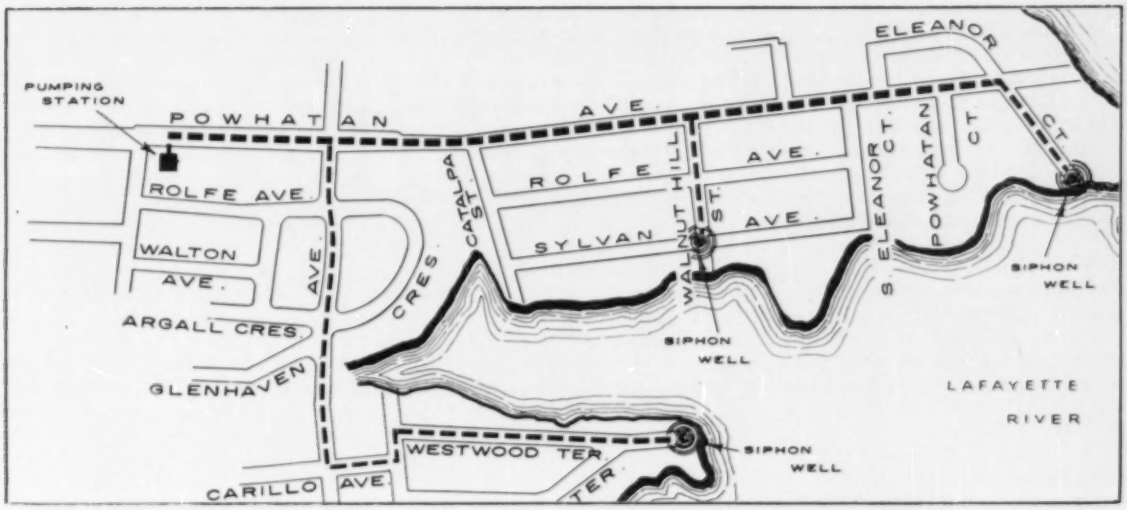
A Construction Section of the Maintenance Division repairs and reconstructs sidewalks as a part of its varied duties. This crew also performs drain installations, bridge maintenance, weed control, creek cleaning, and other tasks. The city assumes the responsibility for the repair or replacement of the sidewalks at intersections. A Sidewalk Section searches for deficient sidewalks and notifies the property owner of his responsibility to repair or replace the walk adjacent to his property.

A sidewalk repair and replacement crew consists of two units. A three-man breakout gang arrives at the scene first with a two-yard truck and a trailer-mounted air compressor containing paving breakers and cutters. Another three-man crew then replaces the first unit and undertakes the job of forming, placing, and finishing the concrete. Their equipment includes a pickup, two-yard dump truck and a portable concrete mixer for the small jobs. Commercial ready-mix plants supply larger quantities of concrete based on a yearly bid price for projects where the portable mixer would be uneconomical.

"Trouble-shooters" clean a clogged sewer.

The Reason Why

Adequate maintenance costs money, but it buys good public relations. Adequate maintenance also saves money by preventing or reducing lawsuits against the city as a result of the inadequate upkeep of improvements. It exposes potentially dangerous situations in time for corrective action. A thorough job of maintenance is of no less importance than proper and efficient construction. ◄◄



This sketch of the Edgewater siphon system shows a single pumping station receiving sewage from a fairly large area served by three siphon wells.

Siphon System Cuts Sewerage Costs

. . . in Norfolk's ever-expanding system that already utilizes 55 pumping stations

By **A. C. FREEMAN, III**
Water and Sewer Engineer

Much of the sewer system in Norfolk, Va., relies on the well known siphon principle for its operation. Our use of the siphon system, with modern equipment, grew out of an extensive pollution-abatement program conducted in the area during the past ten years.

Like any other seacoast city, Norfolk had numerous sanitary sewers discharging into tidal waters. As the city grew, it became evident that this practice had to be discontinued, for pollution had reached such a point that it was affecting the seafood industry. The numerous public bathing beaches located in the area were also threatened with contamination.

Thus in 1938 the city elected to join the Hampton Roads Sanitation District Commission, a state agency established to treat sewage. In general, the Commission had the responsibility of constructing the necessary treatment facilities and providing adequate trunk mains to the plant and the city would establish its own lateral systems, pumping into the trunk mains.

The immediate problem called for the physical closing of 16 main sewer outfalls. Actually this meant the reversing of flow in the collection system. Following much discussion as to who should do this work, the outfalls were grouped, with certain ones to be closed by the Commission and the balance to be closed by the city. The time schedule called for this work to be completed between the years 1950 and 1957.

By 1957 the city eliminated 12 outfalls at a total cost of $650,000. In

Architecturally, each pumping station is designed to fit its surroundings as is shown by the ejector station in a commercial area (left) and a pump station in a residential section (right).

some cases where a sewer at the end of a street discharged overboard into tidal waters, we reversed the sewer grade by constructing a new line, allowing sewage to flow back to a deep trunk main installed by the Commission. In other cases we found it necessary to build a small pumping station at the outfall and pump into the nearest trunk line.

Siphon System

The most unusual method utilized is known as the siphon system. According to our records the first such system used in Norfolk was constructed prior to 1900 and worked continuously until 1950. This type of system is just what the name implies, in that a siphon well is installed underground into which the gravity sewers discharge. A cast iron pipe, laid on a slight upgrade, leads back to the nearest pumping station discharging into the wet well. A vacuum pump is connected to this pipe at the station end, the theory being that the vacuum pump will remove air from the line until the atmospheric pressure on the water in the siphon well pushes the sewage through the cast-iron pipe.

This type of arrangement is particularly advantageous where the terrain is such as to form many jutting peninsulas. The high cost of pumping stations prohibits their use on each of these peninsulas, so whenever this condition arises we install a siphon well instead. To date we have seven separate siphon systems with a total of 15 wet wells. One of our systems contains six siphon wells on one main siphon header.

The original line previously mentioned operated as a natural siphon for many years, for once the air was removed the sewage flowed continuously. However, this is not always the case, and it is for this reason we install the automatically operated vacuum pumps.

In comparing the cost of the two systems, the city invests between $30,000 and $40,000 for a pumping station while the cost of the siphon well itself is approximately $8,000. Operating and maintenance costs of the siphon systems also run less than that for pumping stations.

With the exception of a few minor outfalls not included in the original agreement but now under study, Norfolk is now pollution free insofar as the discharge of raw sewage is concerned. The Norfolk Department of Public Health considers that the Lafayette River, which extends through the center of town, is now available for recreation use. Bathing beaches in the vicinity of Norfolk are among the nation's best.

However, with continued expansion and annexation we find it necessary to build more and more pumping stations. While our 55 existing pumping stations may be somewhat of a record, they could hardly be considered an asset. Nevertheless, they are necessary and we are proud of their architecural appearance and condition and feel that they fit in with their surroundings.

Station maintenance is divided in such a manner that one operator will visit eight stations twice a day. Since they are all automatic, this is chiefly an inspection visit. Should repairs be in order, the work is turned over to a repair crew. We also have a replacement program which calls for the replacement of certain pumps every year as they become obsolete.

Following are several maintenance tips which, although elementary, go a long way toward keeping these installations in operating condition:

1. Keep sewage force mains full at all times. This is accomplished by either placing a weir in the line or changing the line elevation at the end to assure a full pipe.

2. Operators should inspect automatic stations once or twice a day.

3. Each pumping station should contain a log book.

4. Check valves on long transmission lines should be weighted.

5. Sewage pumping stations should be well kept and clean.

6. Clean wet wells regularly.

7. Have a complete set of drawings showing location of valves and overflows.

Future plans call for the eventual extension of sewers into all areas of the city not now being served. These will be built as requested by the people on a petition basis and are estimated to require about eight to ten years to build. Their estimated cost amounts to some $17 million. ◄◄

Additive to Reduce Heat Generation Under Test

Using a compact multipoint recording instrument, engineers are taking readings on day-to-day temperature changes from thermocouples embedded in the concrete of the Charlotteburg Dam. The dam is part of a water-supply project, designed by Parsons, Brinckerhoff, Quade & Douglas, Engineers, and now under construction to provide additional water storage for Newark, N. J.

A Weston instrument records inputs from two sets of five thermocouples installed in the dam. One set is in a section of regular concrete while the other set is in a section constructed of concrete treated with Sika Chemical Corporation's retarding densifier. Recording all data on a single strip chart simplifies reading of the data. Sika is gathering data on the effectiveness of the additive in minimizng heat generation of concrete and thereby reducing thermal cracking. ◄◄

Temperature recordings on two types of concrete used in this dam will provide data on the effectiveness of a chemical additive to minimize heat generation. The dam will provide additional water storage for Newark, N. J.

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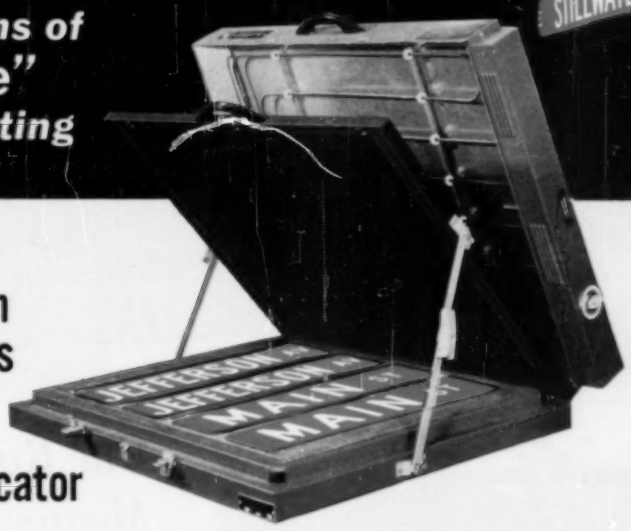

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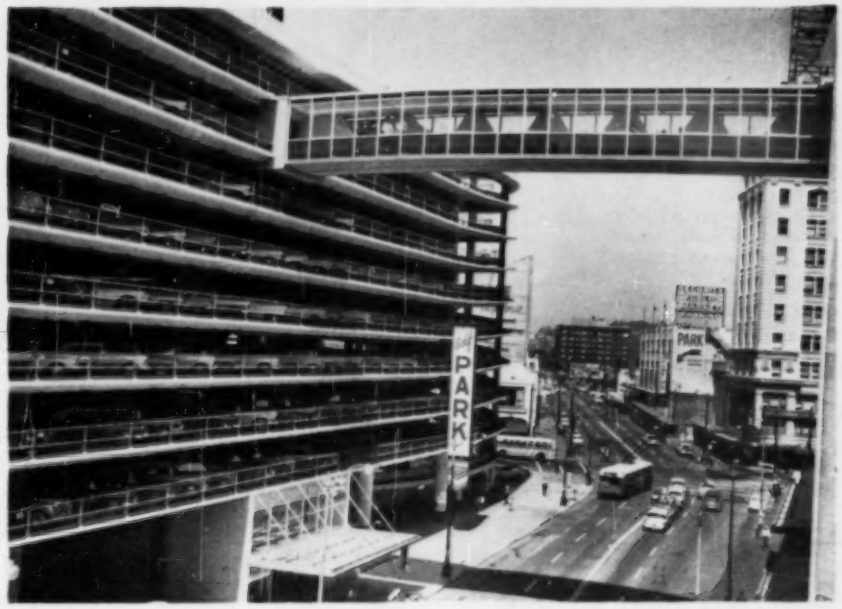


Seattle's newest parking garage and its walkway to the Bon Marche department store.

Emptying a parking meter into a specially designed truck.

The three-wheeled vehicle used by the parking checkers.

Parking in Seattle

By **E. E. LEWARCH**
City Traffic Engineer

Scenic Seattle, Gateway to Alaska, is the eighteenth largest city in the nation. The 1960 population is 550,525 and the latest vehicle registration for the city was 287,750 or one vehicle for every 1.9 persons.

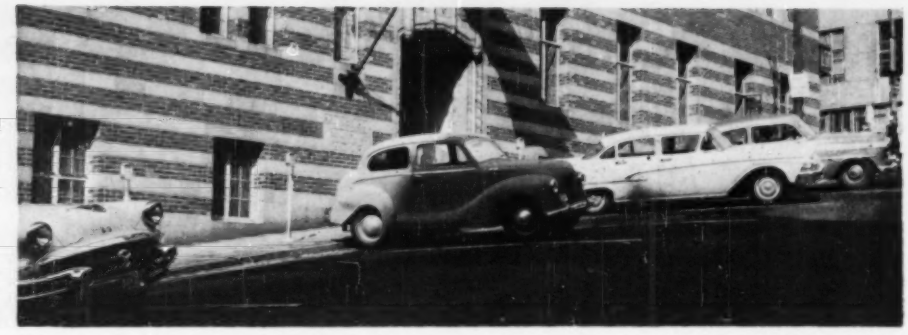
This high rate of vehicle registration per capita within the city, plus an even higher rate in the suburbs, has intensified the parking problems in Seattle. Two large universities — Washington and Seattle—plus Pacific Lutheran College, located within the city, and the Boeing Airplane Company, employing 40,000 persons, create parking problems.

Seattle's on-street parking problems include steep grades on several streets in the central business district. "Back-in angle parking" is an innovation to provide additional parking spaces and to eliminate the "runaway" type of accident prevalent on these streets when parallel parking was permitted.

Back-in angle-parking stalls are designated at a 60-degree angle to facilitate the back-up movement. Each parking meter, moved back from the edge of the curb, has a sign with the legend "Back-in Angle Parking Only," and at least two larger signs with this legend are installed on utility poles in each block. This style of parking is installed only on streets of sufficient width, where traffic volumes are moderate. The back-in method of parking has proved to be not only effective but also highly popular.

Parking meters were first installed in Seattle in 1942. At the present time there are 8,600 meters in

(Continued on page 108)



Back-in angle parking is used on wide streets with steep grades.

(Continued from page 107)

operation throughout the city, over 5,900 in the central business district and the rest in outlying areas.

Most of the parking meters installed in Seattle since 1957 are the double head Twin Dual meters. They are installed on the curb in the center of a 36-foot double meter space. An eight-foot cross-hatched area defines the double meter spaces and facilitates the parking and leaving movement.

The rates and the time limits on Seattle parking meters vary considerably, depending on location and parking demands. The majority of the meters (3,473) in the central business district have a two-hour time limit with a rate of one nickel for each thirty minutes; 1,874 meters have a four-hour time limit with a rate of one nickel for each hour; 548 meters have a 30-minute time limit with a rate of one nickel for each fifteen minutes; and 22 meters limit the parking time to fifteen minutes. During 1959, all parking meters were modified to accept dimes as well as nickels. Before that, only nickels would operate Seattle parking meters.

Since November, 1957, "meter maids," or "parking checkers," as they prefer to be called, have enforced parking violations in metered areas. Twenty-two parking checkers have released police officers for other enforcement duties. Although approximately 95% of the citations written are for overtime parking, there are actually thirty different violations under the enforcement of the parking checkers. Included are such violations as parking in loading and prohibited zones, double-parking, meter feeding, improper display of license plates, etc. After the parking checkers were assigned to metered areas there was a substantial increase in the number of citations written as the additional personnel were able to cover the metered areas more frequently. All out-of-order parking meters observed are reported to the Parking Meter Maintenance Shop of the Traffic Engineering Division for prompt attention.

The parking checkers walk to most of the routes in the central business district. The remainder of the routes in outlying business areas are reached with a three-wheeled motor vehicle.

The parking checkers are attached to the City Treasurer's Office. The extent of their enforcement duties is limited primarily to parking violations in metered areas only; moving violations are the responsibility of the Police Department. The women who serve as parking checkers are selected from a Civil Service list. Their starting salary is $325 per month, plus $50 annually as a uniform allowance.

The collection of parking meter revenue is also a function of the City Treasurer's Office. Six men using a specially designed two-wheel cart collect the revenue from each meter weekly. The cart is placed alongside the parking meter and when the meter is unlocked the coins drop into a funnel and continue down into a semi-sealed container. The containers are marked according to district and transported to the City Treasurer's Office via a truck used exclusively for this purpose.

At the City Treasurer's Office the coins are sorted and tabulated by a specially designed mechanical sorting machine. All Canadian coins and coins other than dimes and nickels are sorted and tabulated manually. The gross revenue from Seattle parking meters in 1959 was $888,577.25 and during this same period a total of $48,981.96 was expended for parking meter maintenance. The revenue received from parking meters is placed in the general fund.

All traffic fines for citations written by parking checkers and police officers are collected by the Traffic Violations Bureau of the Municipal Traffic Court. The fine for overtime parking at a meter is one dollar if paid within seven days. If payment is delayed over one week the fine is raised to five dollars. These fines are also placed in the general fund.

Private enterprise operates all off-street public parking in Seattle except municipal lots in parks and other public facilities where free parking is permitted. There are 20,500 off-street parking spaces in lots and garages in the central business district. A comparable amount of free off-street parking is provided by secondary business districts, supermarkets and shopping centers.

Parking rates vary according to nearness to the core area. For the first hour they range from 25 to 55 cents. All-day rates vary from 65 cents to $2.50.

Turnover at off-street parking facilities in the central business district between 9 A.M. and 5 P.M. is slightly higher in public lots than in public garages. In public lots it averages 2.30% as compared with 1.59% in public garages. All-day parkers occupy 29% of the spaces.

Five large buildings in the Central Business District completed or just completing provide from 300 to 350 off-street parking spaces each. A self-park garage with 1,267 spaces was opened this year and is shown on page 107. ◄◄

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Eliminate confusion
. . . by guiding traffic
safely into difficult areas
. . . quickly . . . simply.

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ADDRESS _____

Today's Thinking About 1975 Urban Traffic

Radar for vehicle control and traffic surveillance, new concepts of illumination for night driving, and electronic controls for operating freeway systems may well be in use in the years ahead.

By 1975, highways of the United States are expected to occupy over 17 million acres of land (nearly one-tenth acre per capita). The new 41,000-mile interstate system alone will require area equal to that of the entire state of Rhode Island.

Ultimate development of our existing arterial street system would include: eliminating all curb parking, restricting left turns unless separate left-turn lanes could be provided; providing medians where street width permits; eliminating unnecessary crossovers and separating opposing traffic flows; channelization wherever necessary; modern signal systematizing with volume density or flexible-phase responsive controllers; physical separation of pedestrians and vehicles in concentrated areas.

The step-by-step unfurling of ribbons of concrete and asphalt is changing the face of every American city. Traffic-choked metropolitan centers are increasingly seeking to untangle their intertwined roadway networks by constructing belt routes, freeways and other non-stop bypasses to help alleviate traffic bottlenecks.

A common complaint in Los Angeles is that the freeways are too crowded going to and from work. The simple and devastating rebuttal to this complaint is that they were no more designed to carry all the commuters in one hour than an office elevator is to carry all the employees in a building in one load.

Transportation in Los Angeles is dominated by the auto. For the convenience they offer, people own and operate cars in preference to other means of transportation. In many instances our network of roads is already inadequate to handle peak hour volumes, let alone future growth.

Los Angeles is the most "freewayed" area in the world. Within our city limits adopted freeway routes total 246 miles of which 65 miles are operating and 181 miles are yet to be built. We have 5,912 miles of streets, of which 1,581 miles are arterials, and 36,628 intersections of which 2,471 are signalized. Integration of freeways, surface streets, parking, and transit is our constant objective.

Los Angeles would have serious immobility of traffic were all the present freeways wiped out and travel returned to the street pattern of twenty years ago.

Our Los Angeles experience during the past two decades affirms the fact that three times as much traffic can move on a freeway as on a similar surface street and can do so in one-half the time with about one-fifth the accident risk.

However, our arterial, secondary, and feeder streets also perform important functions.

City officials must face up squarely to the responsibility of developing the remainder of the urban street network—the arterial, collector and local street systems—to those standards of design and operation that will assure the levels of service required to support the freeway system and prevent early obsolescence of the total transportation system and the urban area it is intended to support.

Compared to twenty years ago, travel times during the off-peak hours in Los Angeles have improved spectacularly while travel times in the peak hours have also improved, or at least held their own, while vehicle registrations have tripled.

Without the freeways downtown Los Angeles would be literally "blacked out" with traffic. This is evidenced by our traffic flow map.

Both mass transportation and travel by private vehicle are essential factors in the urban traffic picture. No governmental authority has the right to penalize any form of transportation, public or private, for the benefit of another but has the duty of making suitable provision for each.

The increasing magnetism of the city center requires greater density and compaction, continued variety, and round-the-clock lively activity. Streets make this possible. Banish the street for elbow room and what have you left?

The streets work harder than any other part of the central city. They are the nervous system communicating the feel and the fancy of the people.

What we need are not fewer streets but more paths in downtowns.

We must plan big and think big. We still don't have a comprehensive montage but we are beginning to glimpse some aspects of the ideal Space Age City. We must re-examine our central city areas to enhance their excitement, beauty and efficiency so that people will want to work and visit and most importantly, to be in this unique and vital place—the heart of the city.

The roots of Americans are no longer in the soil, or the farms alone.

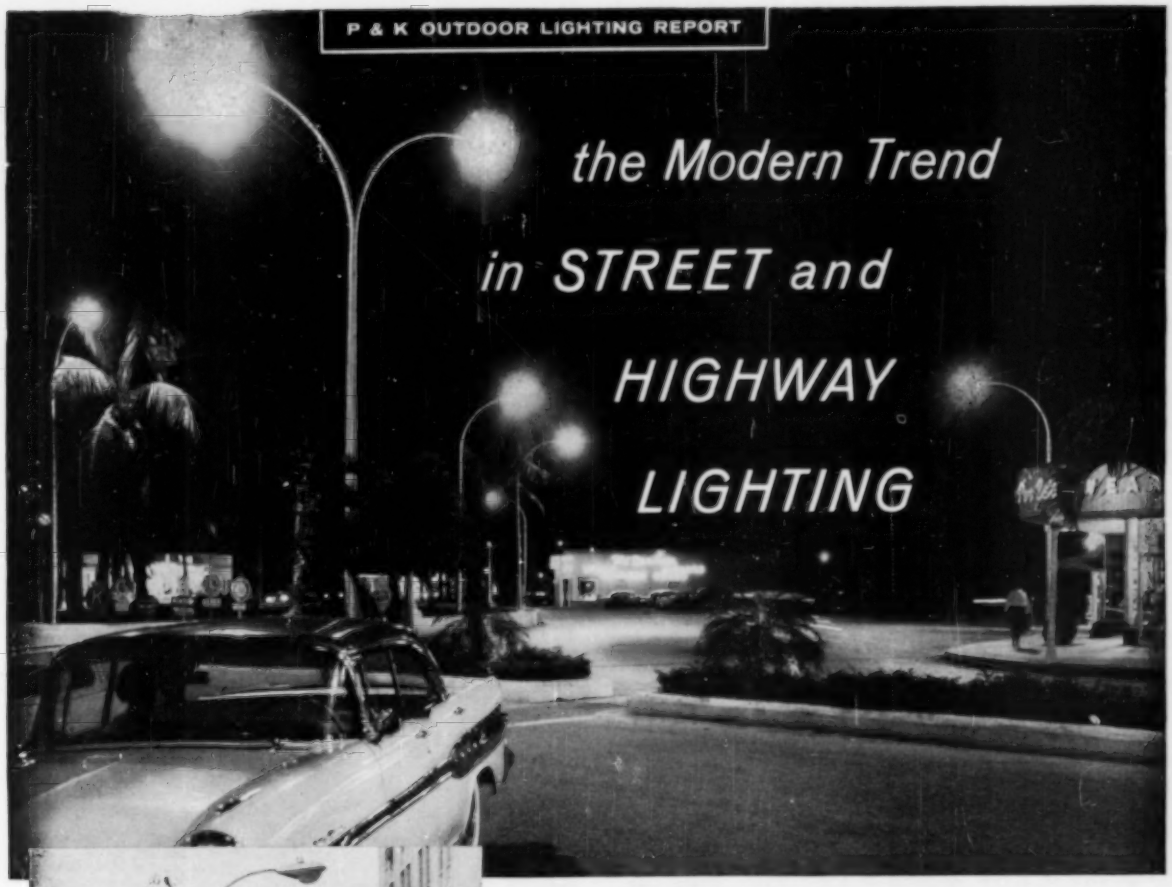
America is our cities.

S. S. Taylor, *General Manager*
Department of Traffic
Los Angeles, Calif.

On Neutral Ground

These three Wald Town and County striping machines, owned by three different municipalities, just happened to meet at this neutral spot, according to Wald Industries, Inc., of Huntingdon, Pa. The machines are positioned at a point where Kansas City, Kans., which is in Wyandotte County, and Kansas City, Mo., meet. The machine on the left is owned by Wyandotte County; center by Kansas City, Kan., and right, by Kansas City, Mo. ◄◄

P & K OUTDOOR LIGHTING REPORT



TOP PHOTO: Traffic circle illumination — West Miami Springs, Florida

LOWER PHOTO: New White Way — White Plains, New York

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More than just modern-looking, P&K street lighting standards are modern in total concept. Compare our use of functional design . . . no scrolls, no tie rods . . . instead a strong aluminum tapered elliptical arm — one piece for minimum inventory, fastest assembly and installation. Compare the P&K davit, truly the ultimate in functional design with a style as fresh as tomorrow. What's more, P&K is modern in the materials of construction: to the inherent strength and light weight of aluminum, P&K has engineered designs to meet every load requirement—from the conventional incandescent and mercury vapor luminaires to the new, larger and heavier models in both mercury vapor and fluorescent. And above all, P&K is modern in its elimination of maintenance problems. No painting required — ever. Even the salty sea air offers no hazard to the good looks of P&K standards.

For more information, reserve your copy of the new Aluminum Lighting Standards catalog now. Ask for our helpful brochures ALS and BR-11.

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A New Street-Lighting Standard

One of the new lighting standards, located opposite New York's City Hall.

By J. P. BUSH and J. A. SCOTT*
Metallurgical Laboratories
Olin Mathieson Chemical Corporation

Lighting columns in the past have traditionally been designed for the single purpose of supporting light fixtures and have been constructed of many materials.

Wooden light poles are probably the oldest. Concrete standards have been utilized by lighting engineers for many years. Some are prestressed, tapered concrete columns and others are fabricated by spinning.

Old-style gothic cast-iron lighting columns are still in service in a few sections of the United States. In New York City, lighting fixtures, designed at the turn of the century, are still functioning. Both cast-iron and steel light poles require periodic painting in order to minimize corrosion.

Aluminum, by its pleasing appearance, light weight and maintenance-free quality, is becoming increasingly popular for lighting standards in the United States and Europe. The circular tapered aluminum column is a common sight on city and state highways for street lighting, overhead sign supports, traffic signals and also as stadium flood-lighting equipment.

These circular tapered aluminum poles are produced from seamless one-piece hollow extrusions of constant diameter, which are subsequently tapered by spinning over a mandrel to form longer poles of uniform wall thickness throughout their length. Octagonal tapered aluminum light standards have been fabricated in Canada using a formed sheet and then welding the longitudinal joint.

An aluminum tapered lamp post with a triangular cross section was recently designed in England; it uses epoxy resin bonding in conjunction with tack welding to fasten the parts together.

In Germany, a large three-sided hollow aluminum extrusion was designed with a cross section resembling the periphery of a three-cornered hat. This design is such that one to three separate fixtures can be easily attached at the top of the column.

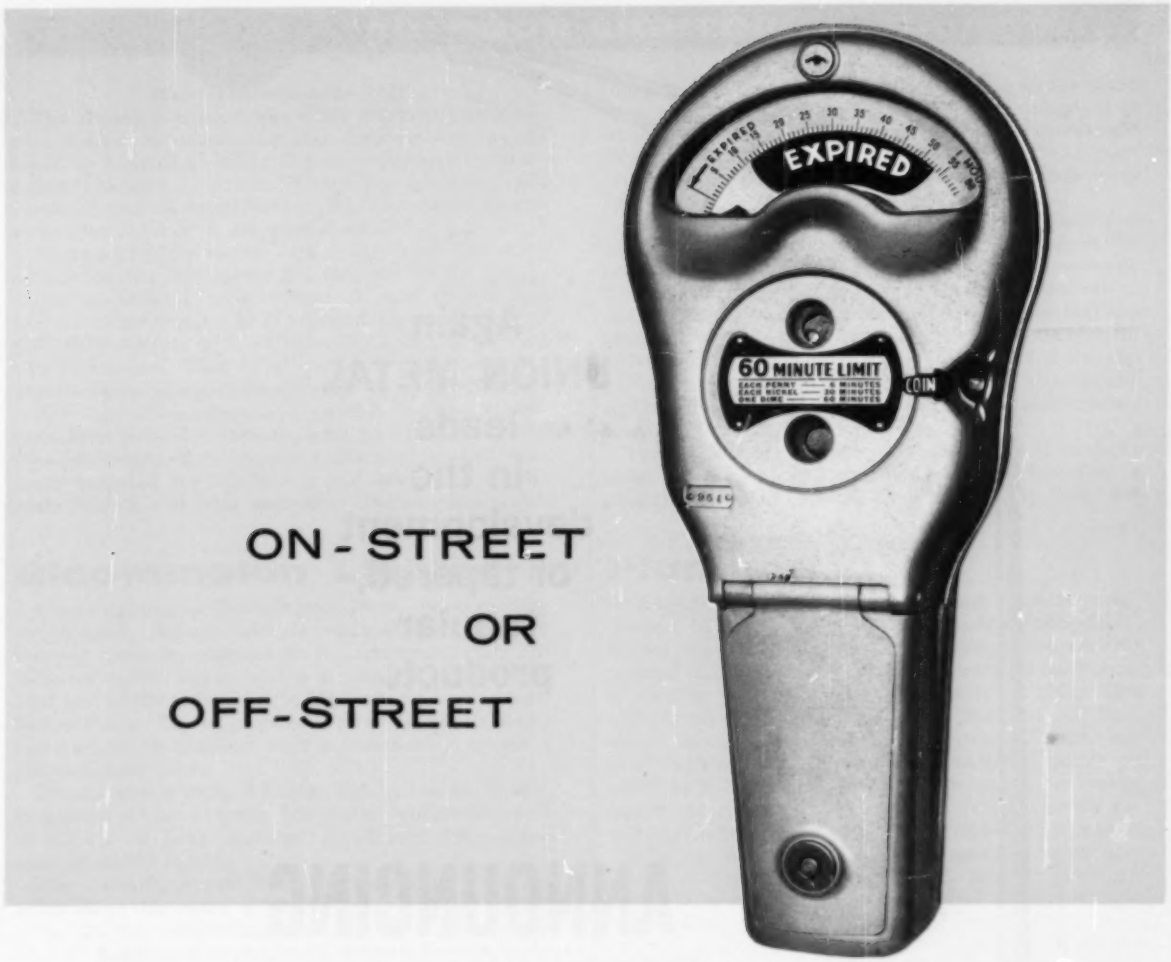
These examples illustrate some of the modern design concepts, utilizing aluminum for lighting standards, that are now being considered throughout the world.

The combined engineering and development effort of several companies has resulted in a new concept in street-lighting equipment now being evaluated by the City of New York—an all-adhesively-bonded, aluminum lighting column. This structure not only provides improved lighting but also can support police call and fire alarm boxes. The pole is the result of a design program conducted for the city by industrial designers, Donald Deskey Associates, Inc.

The column consists of two oval-shaped extruded aluminum sections bonded together with an epoxy resin by a process developed by the Metallurgical Laboratories of Olin Mathieson Chemical Corporation, to form a shaft that is more economical and performs more functions than present designs. Armand D'Angelo, Commissioner of Water, Gas and Electricity for New York City, is considering the replacement of over 64,00 cast-iron lamp posts with this new design.

(Continued on page 115)

* Mr. Bush is Engineering Specialist, Product Development Group, and Mr. Scott is Acting Supervisor, Bonding Group, at the Olin Mathieson Metallurgical Laboratories in New Haven, Conn.



PARK-O-METER PRODUCES PROFIT

Whether your city has on-street or off-street parking problems, Park-O-Meter can be utilized to produce profits.

Park-O-Meters are automatic and accurate. They can be adjusted *on the site* for time, rate and coin changes, thereby eliminating costly shop maintenance and overhead.

Park-O-Meter parts are precisely engineered and skillfully built of finest quality brass, copper and stainless steel. They pay for themselves quickly and continuously. Let a Park-O-Meter parking expert show you how you can have a profitable parking meter system.

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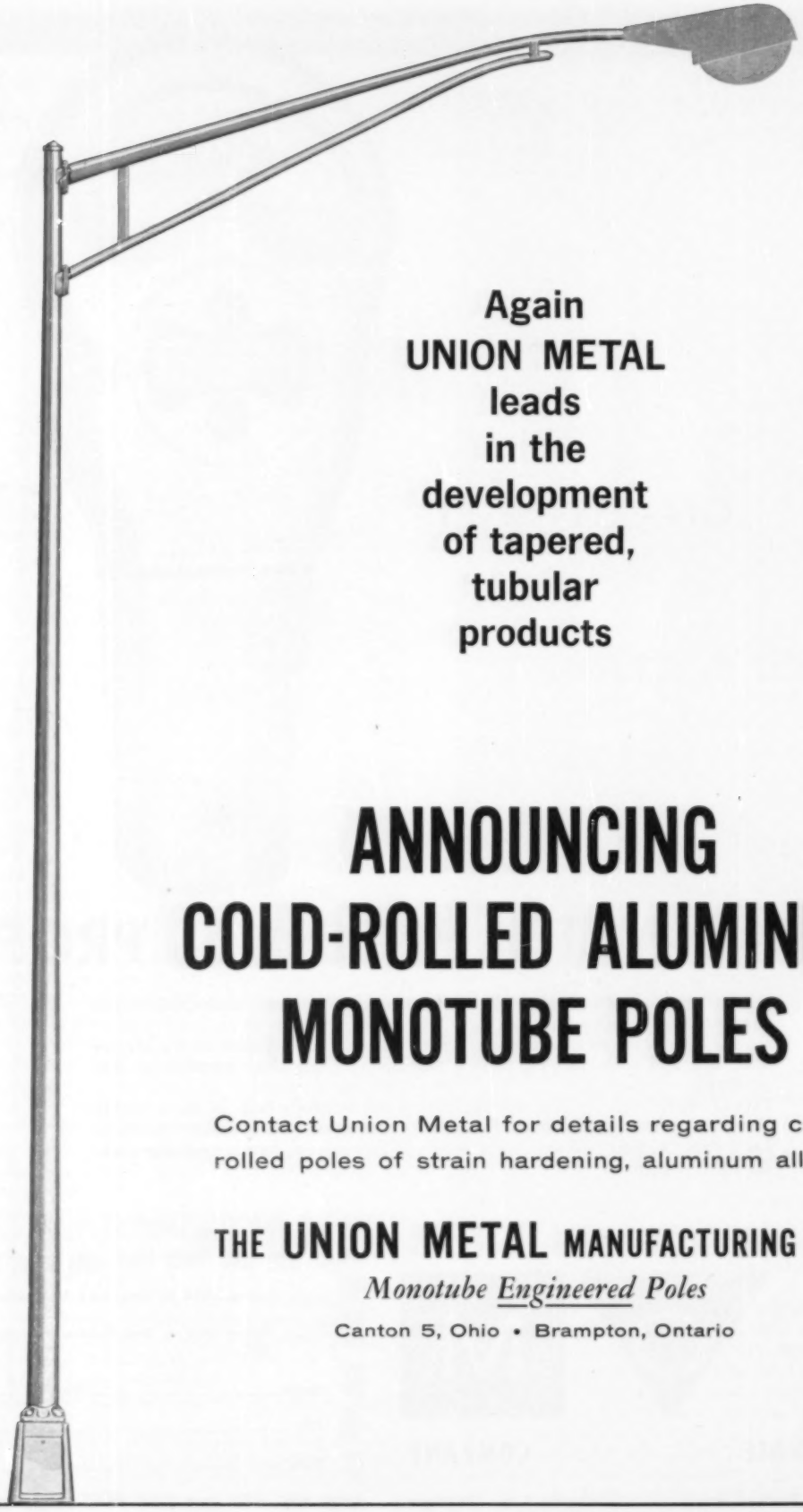

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THE UNION METAL MANUFACTURING CO.

Monotube Engineered Poles

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(Continued from page 112)

The reason for using two solid extrusions in place of a hollow extrusion was that considerable savings could be realized by using this new approach in fabricating aluminum columns. There are additional advantages such as being able to ship more solid extrusions than hollows in the same truckload.

A special feature of this new design is that the arms supporting the luminaires (or lighting units) can be raised or lowered, and rotated. It can withstand a uniform wind loading of 37.5 pounds/square foot over the entire surface area of base, shaft, two arms, and two luminaires. This requirement is equivalent to a wind velocity of approximately 122 miles per hour.

A co-operative program to develop the new aluminum light pole was initiated and coordinated by the Olin Mathieson Metallurgical Laboratories. This program included the fabrication and testing of a full-scale column and base assembly. The original drawings were revised to include modifications in the shaft, base, and cap that were required for the adoption of adhesive bonding. The extrusions for the new light pole were produced at Olin Mathieson's Gulfport, Miss., plant. Aluminum base and cap castings were supplied by Oswego (N. Y.) Casting Corp.

Fairchild Aircraft and Engine Division, which has one of the largest integrated bonding facilities in the country, assisted in the development of this concept. This concern adhesively bonded the two solid extrusions to form the shaft, then bonded the base and cap castings to the shaft. It also assisted Metallurgical Laboratories in selecting a suitable epoxy resin and provided facilities and supervision for structurally testing the first models. Prototypes were constructed in August 1959 by Fairchild Aircraft.

Two of these adhesively bonded aluminum light poles have been in continuous service for over a year in a location opposite New York's City Hall. ◄◄

Bloomington Lighted by Plan

Street lighting in Bloomington, Minn., is proceeding as planned. Village officials realized that effective lighting must be planned in a community with 273 miles of public streets and a population of 10,000 in 1950 and 50,000 today. So, in 1956, we asked Northern States Power Co. to prepare a plan by which street lights could be installed over a period of years on a greatest-need basis.

Bloomington's main business district of six blocks, is lighted to an average horizontal footcandle level of 0.9 by 46 Line Material fluorescent luminaires, each of 23,000 lumens.

The luminaires are mounted on utility company poles that also carry primary power circuits to the area. In the residential areas, 10,000-lumen incandescent lamps are located at all intersections on main thoroughfares. The business district and all main thoroughfares have now been lighted. Due to a reduction in the amount of construction undertaken during the past two years, the Village Council had ordered installation of 720 6,000-lumen incandescent luminaires on residential side streets in 1961. This will complete the original lighting plan and will light almost every intersection in Bloomington. Plans are now underway to place lights at midblock points on extra long blocks, of which Bloomington has many due to the non-grid street pattern. Village policy requires subdividers to provide lighting on all streets.

Effective street lighting is an important asset to a new and growing community. A master plan can result in economies and insure that all street light installations contribute maximum benefits.

CYRUS J. KNUTSON
Administrative Assistant

23,000-lumen fluorescents on company poles light Bloomington business.

Now...one coat of enamel combines rust inhibition, durability and color retention

For the first time these three factors can be provided in one paint containing M50® pigment.

Here's news of a new type of enamel that greatly simplifies the painting of highway signs.

With these new enamels, *one coat* is all that is needed. This single coat combines . . . for the first time . . . more rust inhibition than ordinary primers with even greater durability and "color fastness" than most finish paints. What's more, except for white, these enamels can be made up in all the colors normally used in highway sign painting.

A unique new pigment . . .

M50® basic lead silico chromate . . . gives the one-coat enamels their exceptional properties. In this pigment, one of the most effective of all rust inhibitors, basic lead chromate, is solidly fused to an inert core. In metal protective paints, exposure tests have proved that this pigment maintains high rust inhibiting activity for years and substantially retards color fading.

Greatly inhibits under-the-film rust creepage, as well

As you have probably noticed, when ordinary enamels are nicked or damaged in service, the rust that starts spreads under the paint in no time. As this rust creepage continues, paint flakes off to open the way for further corrosion. The new *M50* one-coat enamels greatly reduce such premature destruction of the paint film . . . help keep sign repainting needs down.

Before you order paint again . . .

Look into these unusual new enamels. They can be made up by your regular suppliers in standard colors.

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General Offices: 111 Broadway, New York 6, N.Y.

A few minutes and different lighting systems . . .

Payette Glitters At Night

. . . make all the difference to Payette's streets.

The City of Payette, Idaho, 5 000 population, completed an extensive street lighting program this past year. The project was authorized the previous September but the steel strike held up delivery on poles until spring.

The program consisted of 16 new 2 500-lumen street lights in the residential district; the replacement of sixty-two 1,000-lumen with 2 500-lumen lights in the residential district; and the replacement of 58 old-style 6,000-lumen lights with 21,000-lumen mercury vapor lights in the business district. The 65 new luminaires in the business district were made by Westinghouse Electric Corp. The poles were manufactured by the Union Metal Mfg. Co.

Our street-lighting system now gives us all-modern 2,500-lumen lights, over 200 in all, in the residential districts and 21,000-lumen mercury vapor lights in the commercial district.

The lights were turned on the evening of April 22. The stores remained open and featured "specials" in honor of the new lights. The high-school band paraded and gave a concert in the center of Main Street, and there were talks by the Mayor, the president of the Chamber of Commerce and an official of the Idaho Power Co. We had a surprisingly large turn-out on a rather chilly night and so had a very successful christening of our new lights.

The "before and after" pictures shown here were taken that night, just a few minutes apart, and were exposed ten seconds at F 5.6.

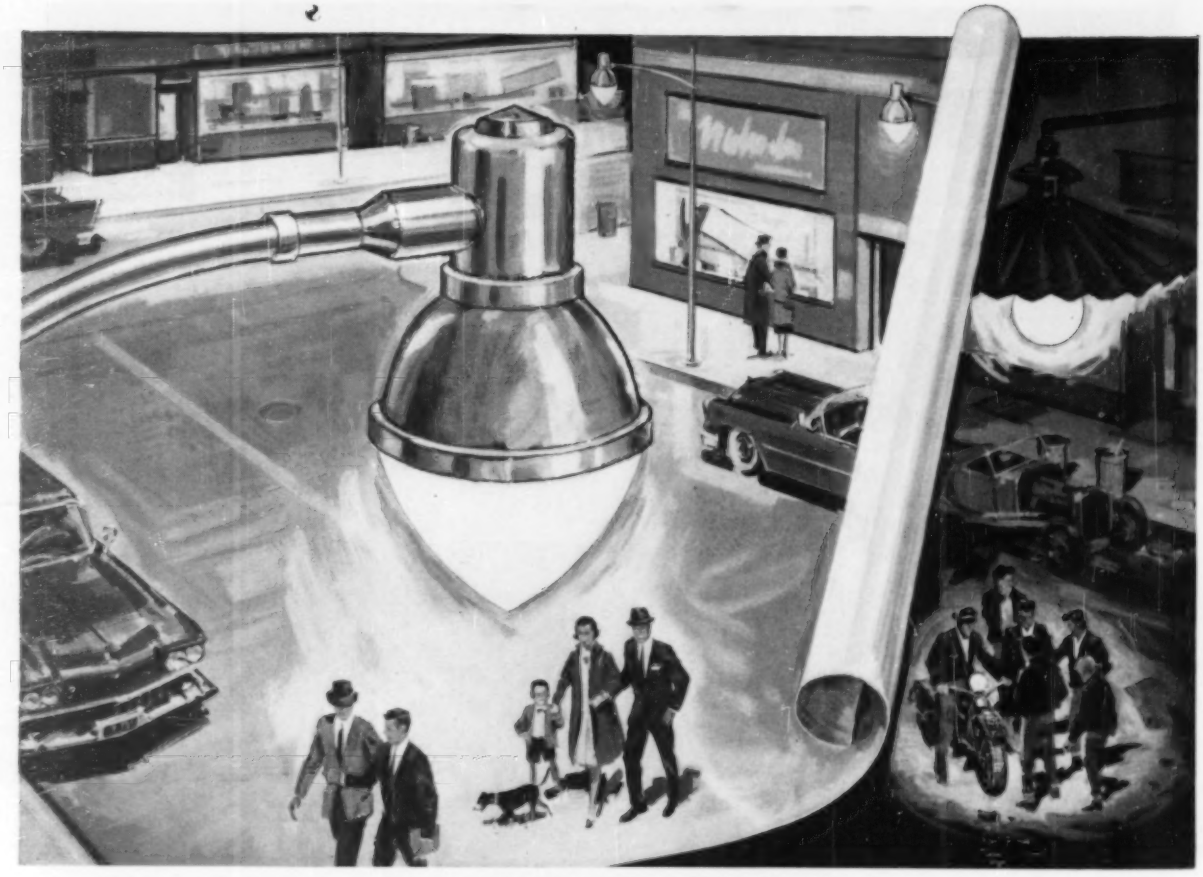
DIRICK E. NEDRY
City Administrator

Lighting a Ramp

Lighting ramps helps make night driving safer on the heavily-traveled Greenbrae interchange in Marin County, Calif. Located five miles north of the Golden Gate brige, the interchange feeds traffic towards San Francisco and the Richmond-San Rafael bridge.

Ramps are among those dangerous areas that need lighting, according to local highway engineers. "This is true," reports J. C. Womack, Chief Engineer of the State Division of Highways, who explains the need. "Heavy traffic, the absence of the shoulder refuge areas and the presence of pedestrian walkways on the ramps make lighting often a necessity."

The average maintained illumination is .9 footcandles. This is above the recommended Illuminating Engineering Society standards. The units are mounted at a height of 30 feet and normal spacing is 165 feet. In merging areas, the General Electric 400-watt mercury vapor luminaires are placed closer together. ◄◄



How Sylvania Banner Mercury Lamps can help you fight crime and lower your TCL

New Sylvania Banner Mercury Lamps with Ruggedized features put 2½ times more light on the street than incandescent lamps...for the same power cost!

You save all along the way when you use these remarkable new higher efficiency lamps.

Ruggedized Sylvania construction shrugs off shocks, vibrations and the roughest weather. The extra long life of Sylvania Banner electrodes – with consistently high lumen output – helps reduce maintenance, too.

Recent advances have extended the lifespan of Sylvania Mercury Lamps to 12,000 hours. Your city can expect to get three full years of light before replacement.

In short, Sylvania Banner Mercury Lamps substantially lower your TCL–Total Cost of Lighting (which means cost of lamp *plus* power *plus* maintenance).

Sylvania Certified Performance Policy guarantees that: Banner Mercury Lamps may be returned to the supplier for full exchange if they fail in less than 1000 burning hours, and thereafter (up to 5000 hours) for pro-rata exchange, in accordance with a pro-rata exchange value table set forth clearly in the policy form.

Let your Sylvania representative tell you the whole story. Call or write: Lighting Division, Sylvania Electric Products Inc., Dept. 63, 60 Boston St., Salem, Mass. In Canada: Sylvania Electric (Canada) Ltd., Montreal.

SYLVANIA

Subsidiary of **GENERAL TELEPHONE & ELECTRONICS**

Drive-in window service gives an added citizen convenience to these area-service centers.

No longer does the public have a long trip downtown for such routine needs as building permits.

San Antonio's Junior City Halls

. . . put small-city responsiveness into large-city administration

By **LYNN H. ANDREWS**
City Manager

Call it growing pains or "population explosion"—the 600,000 people of San Antonio are scattering in all directions. But as they move within the city, the seat of city government is moving with them. In a dramatic and effective venture designed to bring the core of municipal government closer to the people, San Antonio now operates three area-service centers or "junior city halls" at certain locations throughout the city. Now it is no longer necessary for a citizen to conduct his business at the downtown City Hall—he simply goes to the service center nearest his home.

This new concept of better service for the taxpayer is believed to be the first to reach the operational stage in the United States. By 1970 when San Antonio's population is expected to reach the one-million mark, five of these "junior city halls" will be functioning, serving approximately 200,000 people each.

While several large American cities have experimented successfully with municipal decentralization, San Antonio's plan is unique in that each junior city hall is an integral unit. An assistant city manager is in charge of overall operations of the centers, thus giving the individual citizen a responsible city official who has sufficient power to act and with whom he can discuss his problems. This results in a personal touch in daily dealing with citizens without sacrificing the efficiency associated with a good municipal chain of command.

San Antonio is building two of the centers from the ground up at a combined cost of $275,000. The breakdown:

• auto maintenance shops	$87,397
• office building and storage	88,149
• architect	15,500
• gas and oil service	15,421
• fence	5,000
• paving (city crew)	55,000
• shop equipment	8,533

We renovated an existing materials headquarters to make the third service center. One of the centers is located on city-owned airport property in the northeast section of San Antonio's 160 square miles. Another is on U. S. government surplus military property in the southwest area and the third is in the southeast.

Administrative Savings

The new centers are headquarters for garbage equipment and crews, storm drainage and sanitary sewer maintenance division, street maintenance activities and inspection personnel. Health Department sanitarians, rodent control specialists and public health nurses are also assigned and later tax assessing and collecting services may be added. Police and fire administrative functions may also be included in the future.

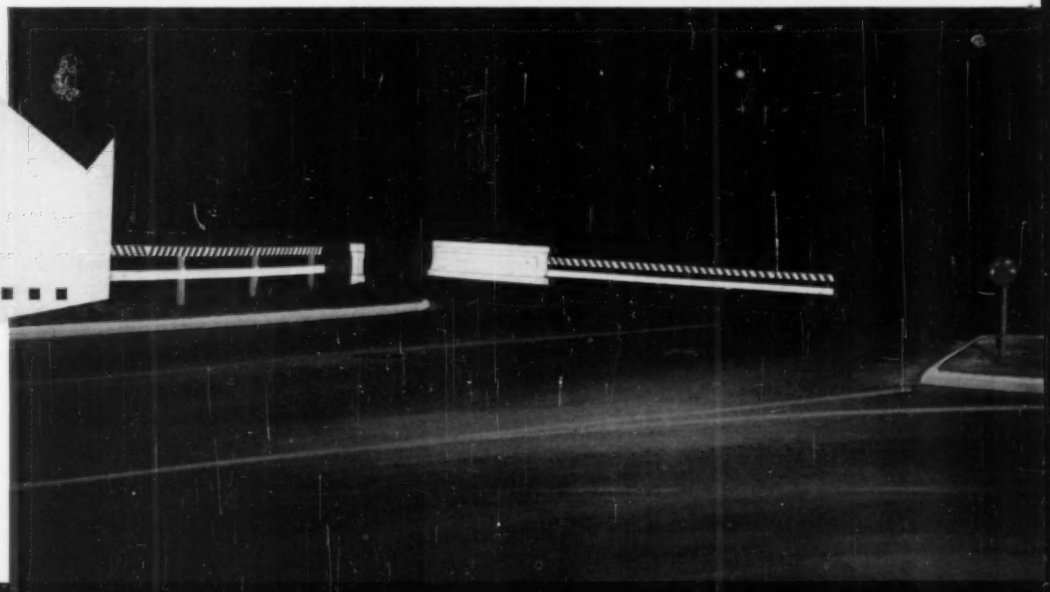
With a larger storage capacity, a one-cent-per-gallon savings on gasoline is expected, totaling approximately $5,500 annually. Diesel oil, purchased and stored in large quantities, should produce savings of three cents per gallon. Motor oil bought in 5,000-gallon lots is about 7.5 cents per gallon cheaper and a salvage oil tank installed at each center is expected to recover $500 annually from the sale of waste oil.

San Antonio's garbage truck fleet of Pak-Mor, Seal Press and Hyde-Pak units, now working out of the new centers, is expected to save approximately $12,500 annually because of the reduction in travel time. For the past five years, it has been necessary to add four additional garbage trucks and crews each year. Now with area maintenance facilities at the centers as well as garbage-fleet storage space, only two additional trucks were planned in 1960—a saving of $25,500 even before the centers were in operation.

The idea of big city government

(Continued on page 121)

THESE HAZARDS CAN'T HIDE IN THE DARK...



they're reflectorized with CATAPHOTE V-S-R

Approach this Jackson, Mississippi intersection in daylight or darkness . . . you're instantly aware of the sharp delineation of curbs and traffic islands . . . barrier boards and bridge abutments. Bright by day . . . brilliant by night . . . these traffic hazards are *reflectorized* with Cataphote V-S-R . . . Vertical Surface Reflectorization.

Available in kit form, Cataphote V-S-R consists of specially formulated bead binder (white or yellow), automatic air operated applicator and Cataphote "101" extra high intensity glass spheres. Easily applied, V-S-R is one of the greatest aids you can provide the motoring public.

Men who lead the way in traffic control have been quick to recognize the safety values of Cataphote V-S-R . . . and use it extensively. V-S-R can help you be a pace setter, too. For more information, write for Catalog V-160.

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MANUFACTURERS OF REFLECTIVE TRAFFIC PRODUCTS

(Continued from page 119)

being broken down into neighborhood units has, of course, long been recognized. Writing in the April 1939 issue of "Public Management," Clarence Ridley, Director, and Orin F. Nolting, then Assistant Director of the International City Managers Association, said, "It should be as convenient for Mr. Citizen to transact his public business with the city as it is to buy a postage stamp or to cash his check at the neighborhood bank. In other words, the larger cities must decentralize the administration of the day-to-day activities to the neighborhoods to gain the mutual benefits that would flow from these intimate contacts and yet retain full advantage of large-scale operations by uniformity of regulations and co-ordinated control."

There can be no doubt that convenience to the public was a great factor in the decision to establish San Antonio's service centers. But of equal importance are the anticipated savings yielded by their establishment. However, the intimate contact between the taxpayer and his city government cannot be overlooked.

To quote the Ridley-Nolting report of 21 years ago: "The end result would be to recreate a responsiveness on the part of the individual citizen to his local government that is now noticeably lacking, especially in our larger cities."

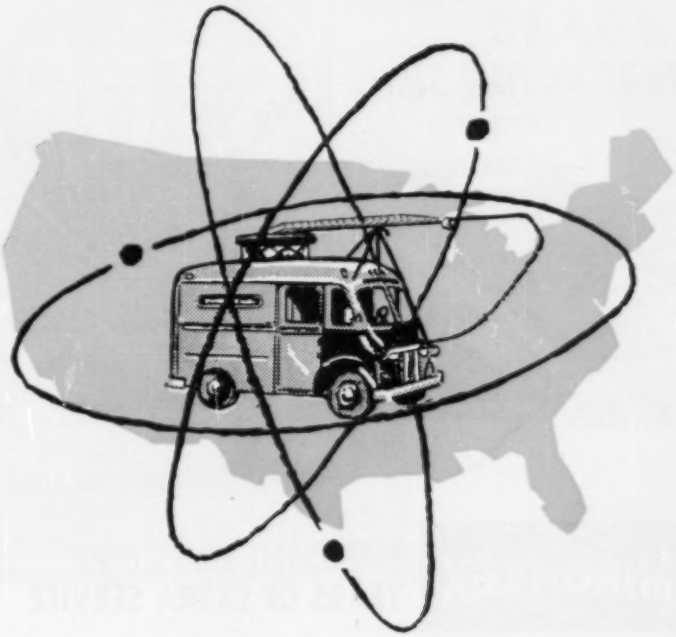
San Antonio has become a "larger" city only in recent years but the junior city halls should reduce it to a more convenient size. ◄◄

1,736 Council-Manager Municipalities

Seven cities have been added since October 1 to the list of cities operating under the council-manager plan. This makes a total of 54 new cities in 1960 and a grand total of 1,736 in the United States and Canada. Two of the six cities adopted the plan by ordinance: Campbell, Calif. (7,662), and Las Vegas, N. M. (7,494). Five cities adopted council-manager charters: South Windsor, Conn. (4,066), by a vote of 1,594 to 288 on October 3; Cape May, N. J. (4,300); Louisville, Ohio (5,100), by a vote of 853 to 245 on October 4; Mentor, Ohio (4,353), by a vote of 432 to 235 on October 4; and Oxford, Ohio (6,944), by a vote of 678 to 173 on October 18. On October 19 Marceline, Mo. (3,172), retained the council-manager plan by a vote of 797 to 189. ◄◄

EVERY PARKING METER IN THE UNITED STATES

NEEDS ELECTRONIC COLLECTION SERVICE



Why? Because only Electronic Collection Service gives you an accurate, right-to-the-penny count...and provides you with vital financial information without extra cost. For the first time, you can check out your parking revenue on the basis of meter-to-meter, street-to-street, area-to-area, or lot-to-lot—without expensive audits.

Now you can get verified collection records and same-day banking of meter revenue. Prove to yourself that only Electronic Collection Service can increase your parking meter revenue, reduce labor costs and tighten your departmental efficiency.

Best of all, Electronic Collection Service works effectively on every make of meter, no matter how old or new your installations.

Take advantage of our FREE ANALYSIS of your existing parking meter collection and service problems. Get full information about our complete meter program for your city, town or village. Write today to:

BROADWAY MAINTENANCE CORP.

PARKING METER DIVISION • 22-09 BRIDGE PLAZA NORTH • LONG ISLAND CITY 1, N. Y.

Central Purchasing for Smaller Cities

While central purchasing is far from universal among American cities, each year more municipalities are added to the list of those that benefit from wholesale orders, standardization of equipment and supplies and centralized stores.

To meet requests for information on the advantages of centralized purchasing, the legal basis for establishing and operating the method, a report was issued in May 1948 by the Bureau of Governmental Research and Services of the University of Washington at the request of the Association of Washington Cities. This report is still standard and is listed by the Bureau as available at 50 cents.

When each department of municipal government provides for its own needs, the principal weakness is the buying of goods in small quantities and often at retail prices. There is also the absence of uniform trade customs and insufficient records. The centering of responsibility for purchasing in a single office tends, at least, to achieve non-political administration.

There is no state statute in the State of Washington providing for a municipal purchasing agent, but a Washington city or town can provide by ordinance for a city purchasing agent. With the exception of cities of the first class, all public-works contracts involving an expenditure over $5,000 and contracts for supplies, materials, equipment or services involving over $2,000 must be awarded to the lowest responsible bidder unless the city council rejects all bids and readvertises.

It is permissible to purchase or accept bids for materials, supplies, goods, wares, merchandise, or produce grown, produced, or manufactured in the State of Washington when the price or prices quoted are not more than 5% over the lowest bid or prices quoted for the same commodities produced outside the State of Washington.

Purchasing Personnel

Small cities may employ a purchasing agent part time. For instance, in Cashmere, Wash., a fourth-class town of 1,882 population, the Superintendent of Utilities, who supervises water, light, and power, and the streets, sewer and sanitation, park and natatorium departments, handles all of the purchasing and therefore audits all the bills before payment. In Colfax, a third-class city of 2,855 population, the head of each department purchases for that department, but if a purchase is for an exceedingly large amount he obtains permission from the City Council.

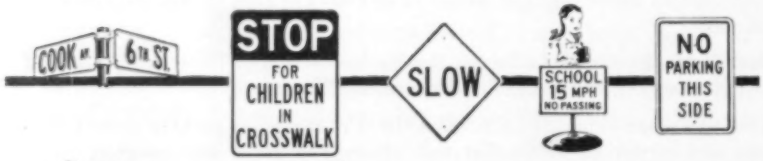
Purchasing facilities are dependent on needs. Some departments may want a central storeroom. Often large quantities are ordered but the vendor serves as the storekeeper and delivers on demand. Some cities have laboratories for conducting tests. An office with adequate filing facilities is the minimum requirement.

The files embrace requisitions, quotations received from bidders, purchase orders, and general correspondence. Constant reference is made to these records. The commodity-price card file in which all purchases are recorded according to commodities is also fundamental to successful purchasing. It constitutes a record of the price and consump-

(Continued on page 125)

MIRO-FLEX EMBOSSED SIGNS GIVE YEARS OF EXTRA SERVICE

You can be sure you're making the best buy in street name assemblies and traffic control signs when they are Miro-Flex. These high-quality signs are embossed to provide extra strength, rigidity, and legibility. They are finished to perfection for years of service in the most rugged of conditions. Miro-Flex can fulfill practically all your sign requirements and at prices that fit your budget year after year. Write for your free copy of the Miro-Flex catalog and prices.



The MIRO-FLEX CO., INC. 1824 EAST SECOND WICHITA 14, KANSAS

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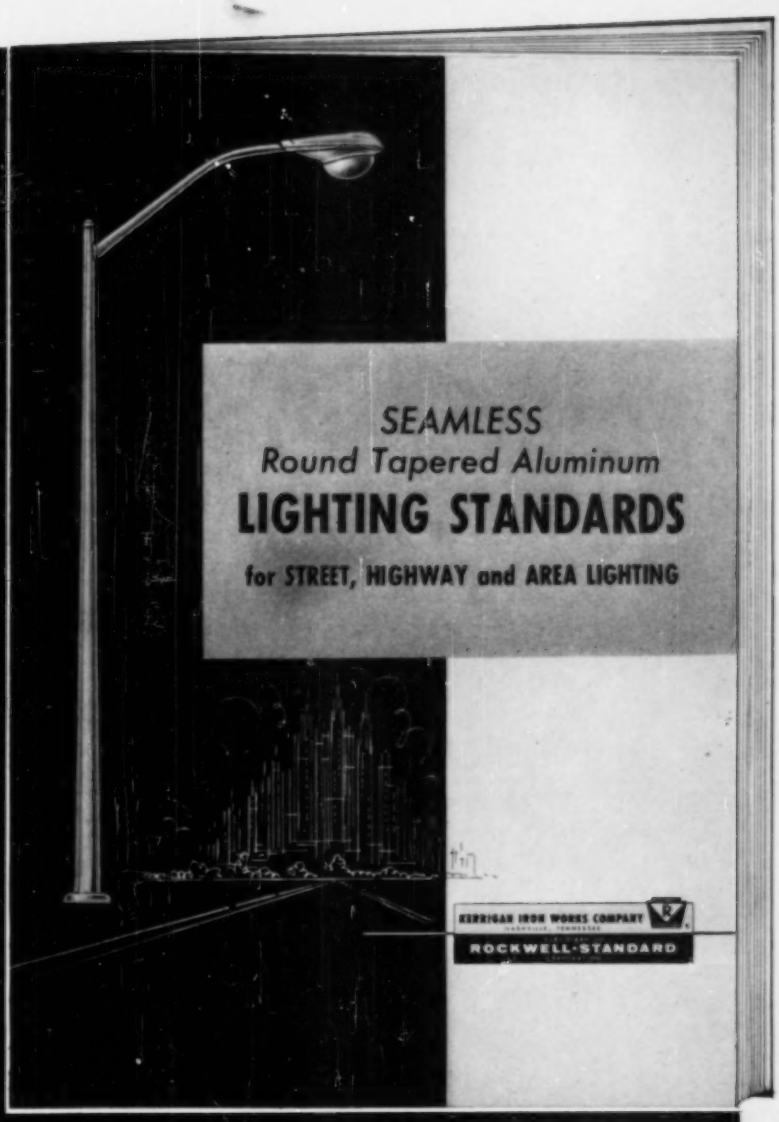

New, streamlined, functional lighting and traffic signal structures combine beauty and grace with strength and installation ease to complement the most modern street, highway or area landscaping. These attractive outdoor lighting products are displayed and described with full engineering data in Kerrigan's new, round tapered aluminum lighting standards catalog. Get YOUR copy now.

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CORPORATION

STREET AND AREA LIGHTING STANDARDS IN STEEL AND ALUMINUM

"Golf Ball on a Tee"

provides gravity pressure water storage

Golfers touring the Oaks Country Club course at Oakhurst, Oklahoma for the first time seldom fail to comment on this striking landmark. It appears to be a giant golf ball perched atop a huge yellow tee.

In reality, it is a CB&I Watersphere. Built for the Tulsa Metropolitan Water Authority, the structure has a capacity of 125,000 gallons and is 97 feet to bottom.

Here is visual proof that elevated water storage tanks can be attractive . . . can actually enhance the surrounding landscape. Most important, of course . . . they provide dependable gravity water pressure for general service and fire protection.

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OFFICES AND SUBSIDIARIES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

(Continued from page 122)

tion trends of commodities used and of the sources of supply.

In buying technical items, the purchasing agent should give careful consideration to the declared needs of the using department. For it is not practicable to standardize all items used by the municipality. While the purchasing agent will have to take the initiative in standardization of specifications, he should work closely with the mayor, the using departments, and city technicians.

Specifications should be worded to eliminate all possibility of misunderstanding by vendor, purchaser, or tester. They should welcome articles commercially available so that maximum competition can be secured.

Advance planning by the purchasing department requires departmental cooperation and data. Operating departments should be required to submit advance requisitions containing estimated requirements for specific commodities over a period of three, six, or twelve months. The first step is the preparation of a requisition by the using department. Requisitions should be numbered consecutively for each department and prepared in duplicate (original to purchasing agent and duplicate retained by the using department).

Wide competition, many bids, is the aim of wise and successful purchasers. Newspaper advertisements, notices on the city bulletin board, and direct solicitation by telephone, letter and personal interview are methods employed.

With advance planning, several methods of contracting for goods are available to the purchasing agent. A price agreement can be made with a vendor allowing goods to be delivered when needed, at a fixed cost. It is possible to take advantage of a low market price by contracting for goods to be delivered on request.

The purchasing agent should inform vendors of the exemption of municipal agencies from certain federal excise taxes. Complete information on these exemptions can be obtained from the Internal Revenue Service.

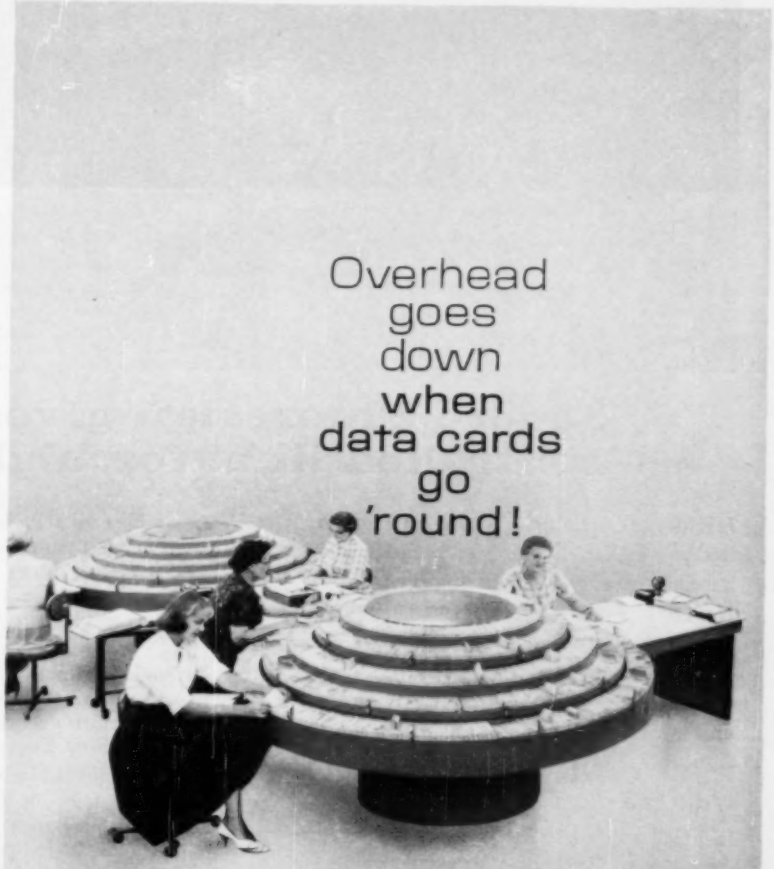
The purchasing municipalities should supply the necessary tax exemption forms to the manufacturers. The manufacturer obtains the tax exemption certificate from the purchasing municipality usually at the time of sale. To avail themselves of the tax exemption both the manufacturer and municipality must be registered in the local district office of the Internal Revenue Service in which the sale is made. ◄◄

Municipal Engineering Training Courses

Rutgers University, New Brunswick, N. J., is offering two courses on municipal engineering. One outlines the duties of the city engineer and the other municipal-engineering practices.

The first of these, "The Duties of the Municipal Engineer," outlines his statutory authority, relations with other public officials and public bodies, general administrative practices, his role in the budget, in planning and public relations aspects. The instructor is William Holster, city manager of Clifton, N. J., who is being assisted by six guest lecturers.

The second, "Modern Practices in Municipal Engineering," covers data analysis, air-photo interpretation, streets, traffic, water supply, sewerage, drainage, refuse, and city planning. The instructor is Professor Samuel P. Owen, of Rutgers. ◄◄



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The Fluoresign is an outdoor fluorescent luminaire that provides high-visibility illumination for signs, panels, walls, posters and highway markers. It is modular to fit any size sign. It is simple to install and maintain. Models available for all fluorescent lamp types.

Revere Fluoresign gives high-level controlled light for highway signs

High-speed driving on modern highways makes efficient lighting of highway signs a must for safety and driving convenience. Revere's Fluoresign provides the high level of glare-free light needed. The Fluoresign distributes light evenly over the entire sign area, eliminating hot spots and glare. It attracts attention to the sign and allows fast, accurate reading.

Specify Revere Fluoresigns for every location where safe, smooth traffic flow depends on instant attention to traffic control signs. Fluoresigns provide the essential high visibility for fast, easy reading of signs in these key locations.

Assembles to any length The Fluoresign can be fitted to any size highway sign by joining combinations of standard 4, 6, or 8-foot reflectors with standard socket assemblies. The reflectors join to form a continuous, unbroken line that blends attractively with the sign.

Easier adjustment Fluoresign reflector and lamp assemblies rotate as a unit in relation to the mounting arm. This permits accurate placement of light even while lamps are burning. Degree marks on socket assemblies allow easy adjustment of the unit to the desired angle for best lighting.

Easier maintenance A new Butyrate one-piece snap-on cover and the all-compressible sockets make relamping and maintenance easy. The cover shields the lamp from cold weather, helps maintain light output when temperature drops. It won't break, shatter or discolor. Its snug fit lets you mount the Fluoresign with the light directed upward.

Write for Fluoresign Bulletin 300-21 for full information

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Municipal Convention Helps Venezuelan Local Government

Venezuela has determined, as a national policy, to bolster local government and to stimulate civic interest in municipal affairs. The National Convention of Municipalities, held at the Central University in Caracas last September, is one of the evidences.

Venezuela has some 160 freely-elected municipal councils which have, theoretically, broad authority and autonomy. They are, in fact, much hampered by fiscal weakness and lack of sufficient technical orientation and guidance. Also, the years of dictatorship and highly centralized government have badly eroded municipal functions and capacities, leaving broad areas of policy determination and action between national, state and local governments largely unresolved and undefined. After the election of President Romulo Betancourt in late 1958, the constitutional government took a series of measures designed to turn away from the trend toward luxury investment concentrated in the Caracas area and toward the development of the interior of the country and in the process provided public works and services for the many other municipalities which had not been receiving adequate attention.

In an effort to promote greater decentralization of the government's activities, the governors of the 20 states, two territories and the Federal District have met three times during the first year of the Betancourt administration, in conferences sponsored by the Central Office for Coordination and Planning of the President's office. These conferences helped the states to develop independent policy agreements. But it soon became evident that similar agreements and understandings were needed about the responsibilities and functions of municipal governments.

Consequently, the Central Planning Office and the President's Commission on Public Administration called several preliminary meetings with representatives of national organizations concerned with municipal development, in cooperation with the Ministry of Interior's existing office of technical assistance to municipalities.

The agenda for the Convention, as finally approved, contained the following items: (1) Institute for Municipal Development; (2) The

(Continued on page 129)

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The NEW

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Safetop Model

Absolute minimum of parts . . .

"O" Ring weather seal . . .

"O" Ring pressure seal . . .

Alemite grease fitting located in operating nut, easily accessible for lubrication

Safety Breakable Section

Full diameter stem threads for maximum strength and easy operation

Nuts and bolts of rust-proofed steel

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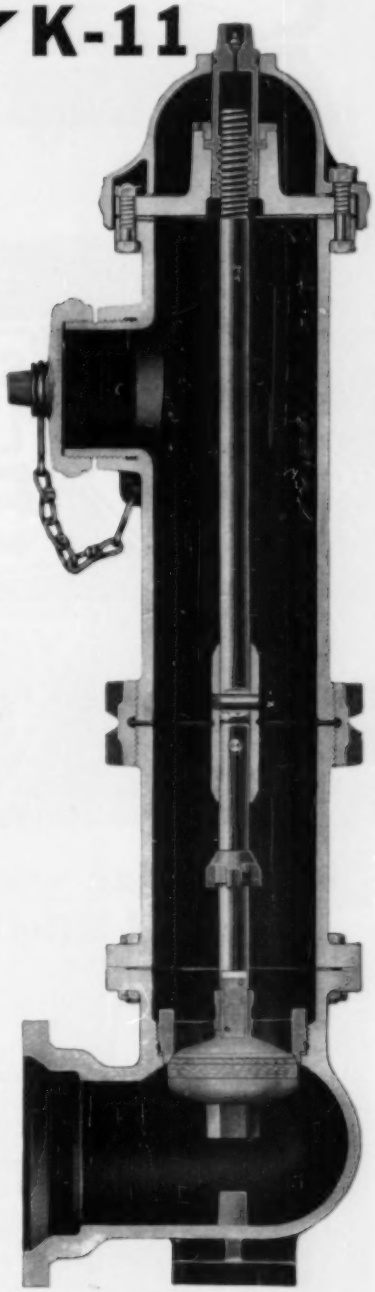
The K-11 Fire Hydrant conforms to A.W.W.A. specifications and is available in three sizes, 4, 4½ and 5 inch and in a variety of pipe end connections.



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STANDARD • MILITARY • MOISTURE-PROOF • HIGH AND MEDIUM INDEX SIGN BEADS

(Continued from page 127)

Municipality, Its Basic Aspects, Municipal Autonomy; (3) Municipal Administration, Public Relations and Finance; (4) Water Supply, Environmental Sanitation and Street Cleaning; (5) Medical and Social Services; (6) Industrial Promotion, Electric, Gas and Other Services; (7) City Planning, Urban and Rural Housing, Streets and Highways, Municipal Land Ownership; (8) Education, Recreation and Sports; (9) Food Supply and Prices, Markets, Slaughter Houses; (10) Community Development.

In a full week of dedicated and well organized effort, the 408 official municipal representatives prepared 63 statements and recommendations to serve as a basic guide to national municipal policy in Venezuela for years to come.

One permanent result of the Convention will be the establishment of a national Service for Promotion and Assistance to Municipalities, at the Presidential level, which will have an advisory board with municipal and national agency representation. This service will provide technical assistance and advice to municipalities at their request and will also undertake other specific functions, such as the preparation of model ordinances. ◄◄

City Manager "Jumpers" to Receive Study

Two universities will direct attention to the city manager "jumpers," those who serve one city for less than two years, according to the International City Managers' Association. At the University of Kansas, Professor Edwin O. Stene will concentrate attention on cities where managers have stayed for short periods and also on managers who, during the past five years have served for less than two years in one city.

At the University of Florida, Professor Gladys M. Kammerer is directing a statewide study of the tenure of managers in that state to determine the tenure of city managers in relation to community political stability.

Short tenure, ICMA notes, is not always the fault of the manager. ◄◄

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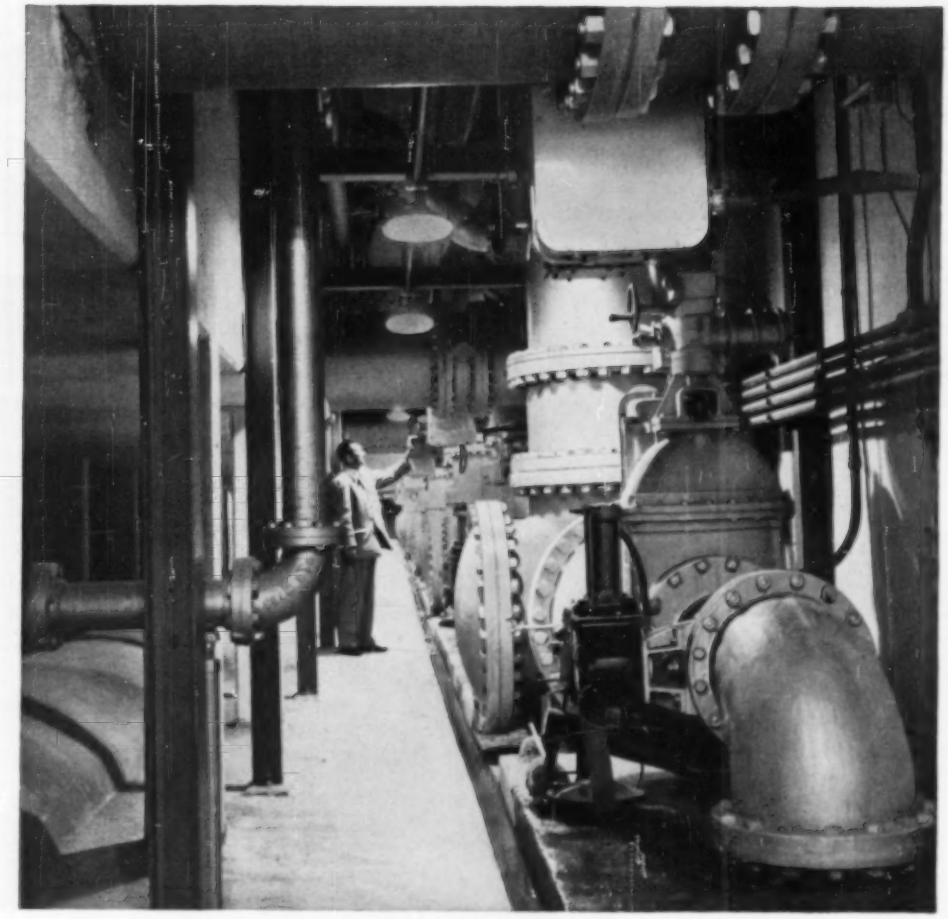

DIFFICULT JOB? TOUGH? Yes, but not for Roberts . . .

Just one of the many problems in the reconstruction of the Queen Lane Filter Plant was keeping the filter plant operating during the entire construction period. Roberts experience solved it—with step construction.

Roberts Filter Manufacturing Company first became a part of the Philadelphia water purification story in 1897. Now, 64 years later, as the Philadelphia Water Department continues its gigantic $123 million, ten-year modernization program, Roberts Filter continues to participate.

Latest improvement is the reconstruction of the filters at the Queen Lane Plant. The new Roberts installation converted the plant to modern semi-automatic operation, at the same time increasing the capacity to a maximum of 150 million gallons per day.

When you specify Roberts you are assured of over 64 years' experience devoted exclusively to the manufacture and installation of water purification equipment.

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DARBY, PENNA.

More Than Just a Water Tower

Suggestions by an industrial designer on how to make an elevated water storage tank a municipal center of interest

Fig. 1. A restaurant at the top of a water reservoir would attract popular interest to a functional structure

At one time, not so many years ago, an elevated water tower was a symbol of growth and civic alertness. It was vivid illustration that the people of the municipality had agreed to go to the rather substantial expense of abandoning the old, unsanitary and unreliable well in each back yard and building a water system that would provide protection against the disaster of fire and the ravages of disease.

It was a great symbol, this water tower, even though its early designs were raw and awkward.

However, today this public service, generally municipally operated, has become commonplace. Unfortunately, in many areas people no longer view the elevated storage reservoir as a protection against the danger of fire, a guardian against dangerous diseases, and an element in the vigorous growth of a community. Instead, they view it as an intruder, a disruption to the orderly life in a residential area, culturally and esthetically out of harmony with the neighborhood.

However, the industrial designers, Peter Muller-Munk Associates, do not think that this needs to continue. What is required, they argue, is for the community water works to take another step forward as it did years ago when it moved from the private backyard well to the community-wide public system.

Instead of restricting the elevated tank to the limiting role of being a structure with a woven-wire fence around it, let it move again to become a focal point of civic interest.

Who, argue the designers, has looked at these structures and has not wanted to view his community from its top? Who also has looked at his community and has not recognized that it needs community centers, park areas, and variety in its residential character? Use these attributes, they argue, and make the water storage reservoir a part of the city's cultural and social life.

Figure 1 shows a combination water tower and restaurant, with every table having a picture-window view. The need for an elevator shaft probably dictates a somewhat larger supporting structure. But such a structure would be a dramatic contribution to a city's interest. Space reserved for water storage also meets excellent engineering design standards.

Figure 2 illustrates the possibility of a water tower and community center. It could house a library,

(Continued on page 132)

Fig. 2. Anything from a public library to a community auditorium could be located in the legs of this water reservoir.

Fig. 3. The upper part of a combination apartment house and small shopping center could be a water reservoir.

(Continued from page 131)

meeting rooms, or any other offices required for civic needs.

Figure 3 shows a water reservoir combined possibly with an apartment house and shopping center. Such a structure would serve the needs of the entire area and provide balance to the residential character.

The encouraging thing is that cities have taken action similar to this in the past, and are doing so today. The Town of Lake, Wis., has a Pittsburgh-Des Moines water tower combined with a structure housing its township offices. In a suburb of Caen, France, an elevated water tank combines with a market, administrative and welfare center (THE AMERICAN CITY, May 1960, p. 169). Western Springs, Ill., has a water tower that has also housed the village hall since 1893, and still serves as police headquarters (THE AMERICAN CITY, May 1960, p. 30). In Oerebro, Sweden, is a combination water reservoir and restaurant built in the shape of a wine glass (*Engineering News-Record*, October 2, 1958, p. 25). Just outside York, England, stands a water reservoir shaped like a castle (THE AMERICAN CITY, July 1958, p. 27).

This is the pattern that has started. All that is needed is for the nation's water works to see that it continues. ◄◄

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*He's not a giant, either. Doesn't have to be. Cause the CMC 3" WONDER-*Lite centrifugal pump* he's carrying weighs only *97 pounds* . . . but will pump in excess of a whopping *19,000 gallons per hour*. Cast iron impeller and volute make it a rugged performer with long, long life. All-aluminum pump body and all-aluminum 4-cycle engine make it easiest of all to handle, carry about.

CMC WONDER-Lites are perfect for all kinds of dewatering jobs. *Available in 1½", 2" and 3" sizes. Write for* BULLETIN WLP-160 for details.

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CMC WONDER-*Lite* LIGHTWEIGHT PUMPS

Hillside Development Costs Extra

Improvement costs for hillside subdivisions may average from $500 to $2,000 more per lot than flat-land subdivisions, according to Leonard Gerkin, land planner with Engineering Service Corp., civil engineers of Los Angeles.

Grading in flat-land areas, will average $275 to $325 per lot, but in the hill subdivisions may run $1,320 per lot, and if rock is encountered, up to $1,650 per lot.

Sewers average about $240 per lot on relatively uniform flat land but on hillsides the cost increases to about $500 per lot.

The extra cost for street improvements in the hills runs about 10% above that in flat land. However, since there are more lineal feet of street per lot in hillside subdivisions, costs may run $795 per lot as compared to $480 in flat-land development.

Cost of storm-drain facilities which are often non-existent or nominal in flat land, may exceed $200 per lot on hillsides.

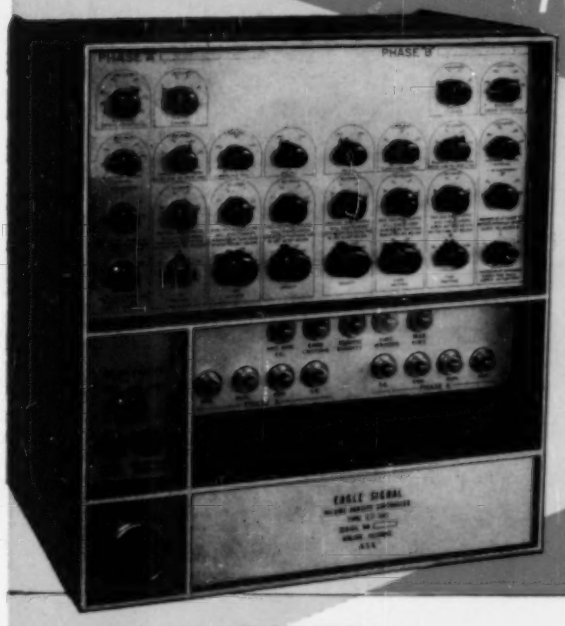
Mr. Gerkin is project engineer for the development of some 7,000 acres of virgin land on the Palos Verdes Peninsula in Los Angeles County which is presently being engineered by Engineering Service Corporation. He is the head of the firm's recently opened Santa Ana office. ◄◄

City Annual Report Is Decorative Calendar

The people of Costa Mesa, Calif., received an annual report from their governing body recently, that was in the form of a usable calendar. The calendar, delightfully illustrated, tells the story of municipal activities in an effective and convincing, yet restrained and dignified manner. It records the fiscal year from July 1960 to June 1961, and briefly describes municipal activities during the past year.

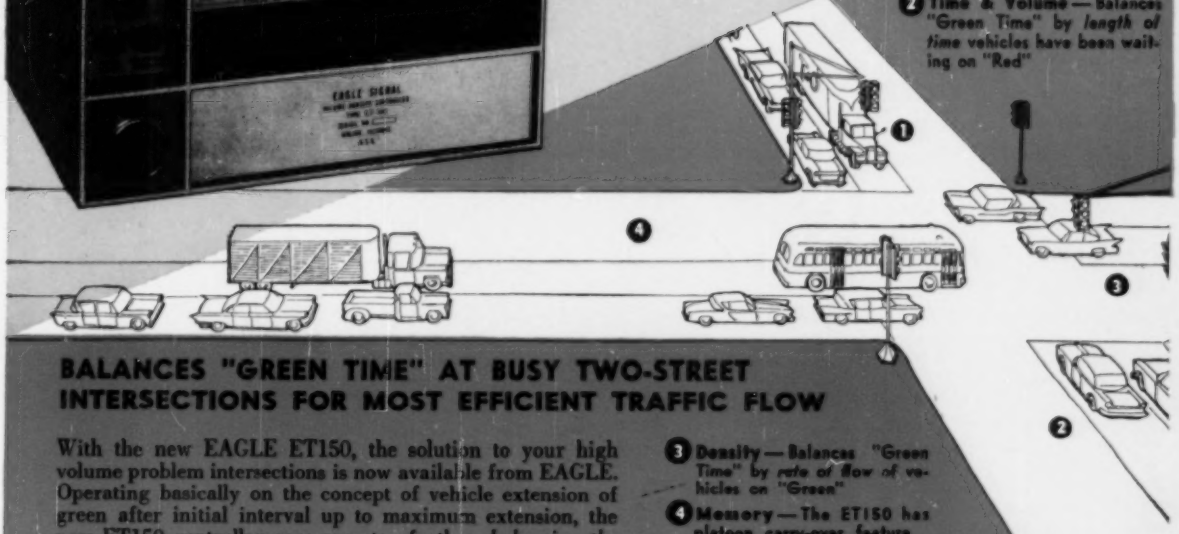
The calendars are being distributed under the direction of C. K. Priest, chief deputy city clerk, P. O. Box 317, Costa Mesa, Calif. ◄◄

NEW EAGLE ET150 TWO-PHASE FULL-ACTUATED, VOLUME-DENSITY CONTROLLER



1 **Volume** — Balances "Green Time" by *number* of vehicles waiting on "Red"

2 **Time & Volume** — Balances "Green Time" by *length of time* vehicles have been waiting on "Red"



BALANCES "GREEN TIME" AT BUSY TWO-STREET INTERSECTIONS FOR MOST EFFICIENT TRAFFIC FLOW

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"Green Time" for both streets is automatically varied by the new EAGLE ET150 based on three factors:

- **The TIME vehicles have been waiting at opposing red;**
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So efficient is the EAGLE ET150's control at heavy traffic intersections, co-ordinated movement with similar adjacent intersections can be achieved without electrical or electronic interconnection.

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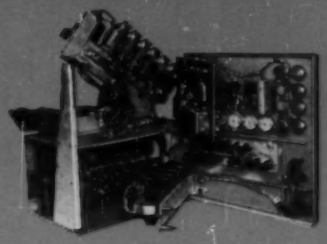

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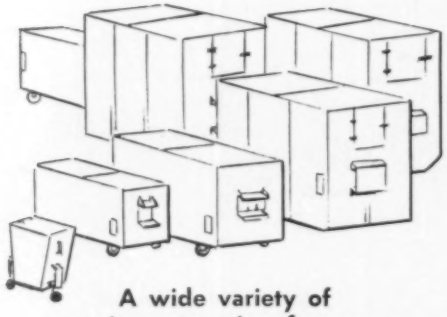
... In Commercial Areas and at Bulk Accumulation Points

Here's the low-cost way to provide the convenience and cleanliness of enclosed, containerized refuse storage in commercial districts . . . while you cut collection costs to the bone. The one-man DEMPSTER-DUMPMASTER handles one-half through eight cu. yd. containers, and makes quick work of downtown and shopping center collection routes . . . handling hundreds of yards of refuse in a day.



A wide variety of containers, ranging from one-half through eight cu. yd. capacity, is available as standard equipment.

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First to perceive the need....
first to conceive the way

In 1927 Automatic Signal developed the *first* traffic-actuated signal. Since that day, creative thinking, imaginative engineering and manufacturing skill have built a reputation for foresight and achievement. Automatic Signal will continue to serve the future by seeking new needs, by developing new ways of helping tomorrow's traffic move . . . adding to its long list of such firsts as:

- Pressure Detector
- Semi-Actuated Controller
- Full-Actuated Controller
- Multi-Phase Controller
- Magnetic Detector
- Volume-Density Controller
- Pedestrian Controller
- Pedestrian Pushbutton
- Cycle Selector
- Speed Controller
- Advance Green Timer
- Lagging Green Timer
- Pedestrian Interval Timer
- Volume Computer
- PR System
- Radar Detector
- Minor Movement Controller
- Radar Speed Meter
- Railroad Radar
- Speed Computer
- Traffic Monitor
- Density Computer
- All-Red Clearance Timer
- Phase Overlap Unit
- Plug-In Controllers and Accessories

ELECTRO-MATIC · CONTROL ·

AUTOMATIC SIGNAL DIVISION EASTERN INDUSTRIES, INC.
NORWALK, CONNECTICUT

Toronto, Canada, has found its realty values increased as a result of the new rapid transit system now in service.

For Better Metropolitan Transport

By **BOYD T. BARNARD***
President
Urban Land Institute

Attention to metropolitan problems and metropolitan planning is of the greatest significance today because most of our growth within the next two decades will take place there. That growth means ninety million more people by 1980.

The expected increase of automobiles in the next decade may mean bumper-to-bumper traffic on all our present roads and all those in the planning stage. Transportation within our metropolises is one of our greatest problems.

Private corporations, such as General Electric are to be congratulated on their continuing interest in the subject of metropolitan transportation as exemplified by their new film, "Everyone's Express."

Suburban commuter railroads and transit companies will continue to get a smaller percentage of the total metropolitan transportation but the number of riders will no doubt increase.

Expressways

Our sprawling suburbs will need more expressways to connect them with each other. Expressways, with the required parking facilities, mean more and more land out of productive use and reduction of the tax base. For example, one-third of all the land in the metropolitan area of Los Angeles is now devoted to vehicular transportation facilities. Two-thirds of the area of downtown Los Angeles is devoted to freeway and streets and off street parking.

To get coordinated action by local governmental bodies is a serious part of our transportation difficulty. The scores of governmental units that are a part of a sizable metropolitan economic area are appalling —cities, counties, townships, towns, boroughs. Have you tried to count them? In the greater Philadelphia area, which includes portions of New Jersey and Delaware, with which I have some familiarity, there are 457 separate governmental bodies. This complexity tends to make it impossible to get concentrated action on metropolitan affairs so urgently needed.

Are there solutions to these problems? The answer is definitely, decidedly, and emphatically yes.

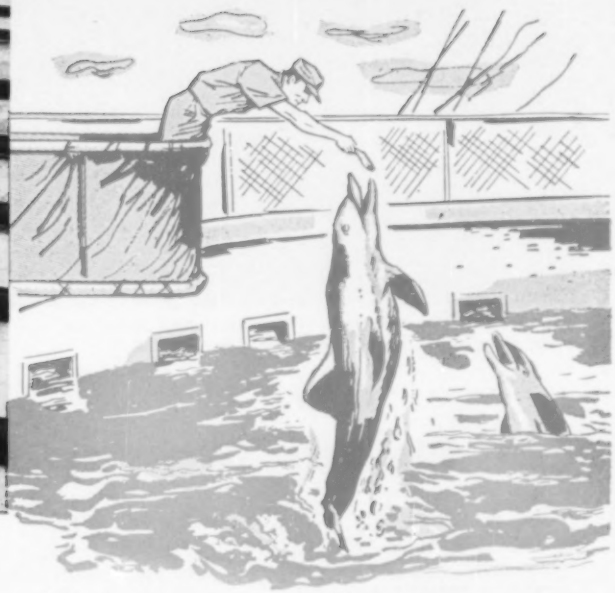
Nothing to my mind is as serious in the affairs of the metropolitan area as public transportation. It must be improved and enlarged and made really metropolitan. It must combine in planning and in operation all the facilities in the community under some kind of authority. I do not necessarily mean a political authority but this is the right way out. In my own community, Philadelphia, we are successfully combining some lines of the transit company with the suburban railroads. The city is underwriting

(Continued on page 139)

*Mr. Barnard is also President of Jackson-Cross Co., realtors, of Philadelphia, Pa. He has served as president of the American Institute of Real Estate Appraisers; National Association of Real Estate Boards, and the Philadelphia Board of Realtors. His paper was presented at a General Electric Metropolitan Transit Conference held recently in the Waldorf-Astoria in New York.

800-sq. ft. filtering system has 4" manifold with 28 ten-ft. lateral attachments of 2" pipe (shown above before being covered by sand filtering element).

MARINE ARENA PROTECTS $700,000 INVESTMENT WITH RIGID PIPE made of ABS Plastic



RIGID PIPE FILTERING SYSTEM INSTALLATION OFFERS NEW PROOF OF SUPERIORITY OVER CONVENTIONAL TYPE

Nearly three-quarters of a million dollars worth of marine life and equipment—including "Paddy", the famous performing porpoise—is now being protected by a new, rigid ABS pipe filtering system. This unique application, using Crescent Plastic's CYCOLAC ABS pipe, has ended all fear of filtering system failure for the Marine Arena of Madiera Beach, Florida. In previous applications, metal pipe had failed in a matter of weeks, and polyethylene pipe had caused constant concern for years. Now, with rigid pipe on the job, Marine Arena obtains a high level of clear, pure water, with satisfactory protection against rust, corrosion and ionization caused by salt water.

BE *ABSolutely* SURE . . .
INSIST ON RIGID *ABS* PIPE
made of
CYCOLAC®
THE BORG-WARNER PLASTIC THAT IS TOUGH, HARD AND CORROSION-RESISTANT

Write for the name of your nearest supplier

MARBON CHEMICAL
WASHINGTON

MARBON CHEMICAL B-W BORG-WARNER

DIVISION **BORG-WARNER**
WEST VIRGINIA

(Continued from page 137)

a part of the deficit. This is subsidy, yes, but we are already subsidizing the motorist and the total subsidy on a coordinated transportation system is likely to be no more than our present subsidy cost. There is no alternative. Private automobiles on public highways can never carry the people. Commuter trains, subways and elevated lines, bear in mind, run regardless of weather. They must always be available.

San Francisco in the near future will vote on financing for a regional transit system. Los Angeles, I believe, is considering how it can get back its abandoned commuter lines.

Toronto, a few years ago, built a rapid transit system and is about to build another. I understand the property values within two blocks of the system soared three to seven times the values before the system was built. Within three years, the increase in realty values exceeded the fixed charges on the system by one-third.

Let's face the fact that the Golden Age of the suburbs has probably passed. Taxes in the suburbs often surpass the taxes within the city with no likelihood of stabilization. Suburban problems are becoming the same as the city's problems of 25 years ago. The city has much to offer the suburbs. The surburban communities are beginning to realize that their problems as they grow create a mutuality of interests which will force a consideration of the ways in which the city and the suburb can help each other. To annex or consolidate is not likely nor desirable, but the seriousness of area-wide community problems, as contrasted with just city problems alone, will force working agreements which will involve planning, utilities, municipal services, and, I hope, transportation. ◄◄

Street Cleaning Costs

The cost of street cleaning in Toledo, Ohio, in 1959 came to $2.20 per person based on the 1960 census population of 315,643. This consisted of removing 31,993 cubic yards of street sweepings and 11,956 cubic yards of leaves.

The city is divided into seven zones, with each zone divided into seven routes averaging about 171 curb miles each. Seven sweepers work in one zone each day, each covering one route. Thus in one week all zones are covered.

A second crew equipped with front-end loaders and trucks picks up and disposes of the street sweepings while four hand crews clean up around radii, inlets, and places not reached by the power sweepers.

Although the business area is cleaned nightly by power sweepers and flushed when weather permits, white wings also work in the area during the day.

Maintenance of storm-water basins and inlets is also a responsibility of the Division of Streets, and each unit is cleaned at least once during the year. The Department utilizes five sewer eductors for this.

Breakdown of costs for the year 1959 is as follows:

Direct labor	$407,220.59
Equipment	137,211.60
Burden (overhead)	150,274.50
Total	694,706.69

The cleaning of all paved streets and alleys is the responsibility of the Superintendent of Street Cleaning. ◄◄

Three low-speed engine-type units installed in new Mill Creek sewage treatment plant.

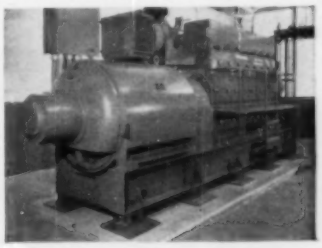
ideal performance at
mill creek

Three IDEAL 1350 kw generators, coupled to 1910 hp diesels, turn at 327 rpm to provide power for pumping, comminution, flocculation, digestion and building lighting at Cincinnati's new Mill Creek Sewage Works. A fourth unit, to be installed prior to completion of the facility, will provide a total capacity of 120 million GPD. It's another example of IDEAL equipment selected for outstanding municipal power development projects where dependable power performance is important.

On the job in similar installations across the land and around the world, IDEAL low and high speed generators in ratings from 10 to 10,000 kw are designed and engineered to meet your exact requirements. You can depend on IDEAL's reputation for quality equipment earned in over a half-century of creative electrical engineering. When your specs say "IDEAL", it's the finest!

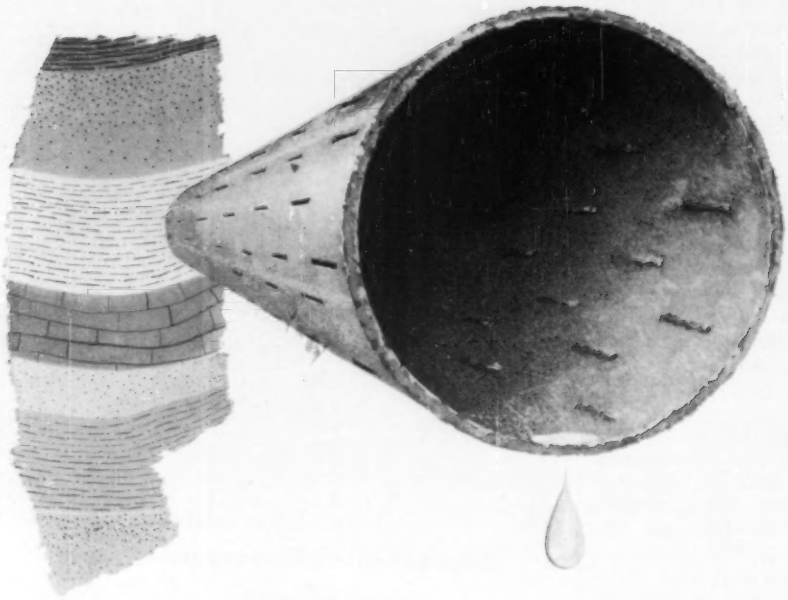
EMERGENCY STAND-BY

Typical high-speed unit installed on a diesel generating set in a Midwestern metropolitan telephone exchange. 50, 60 and 400 cycle, 10 to 4000 kw for any requirement.



The IDEAL ELECTRIC & MANUFACTURING CO.
359 East First St. Mansfield, Ohio

SINCE 1903, AMERICA'S FINEST MOTORS, GENERATORS, MOTOR-GENERATOR SETS, SWITCHBOARDS AND CONTROLS

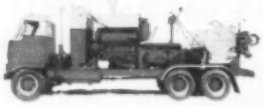


A TELEPHONE CALL MAY SAVE THIS WATER WELL

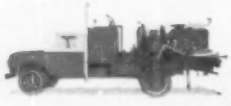
Thousands of water wells have been abandoned merely because the yield dropped below required amounts. In many cases, a telephone call to the nearest Halliburton office may have saved the cost of drilling a new well. Modern methods of remedial services – many of them developments of Halliburton – are revitalizing wells that were considered "dead". Before you decide that a source of water supply must be replaced, call the Halliburton Company. They may help combat these difficulties . . . or help avoid them before they start.

For over 35 years, Halliburton has had men, materials, and equipment on the job gaining the trust of thousands of engineers all over the world by:

- Performing well completion and remedial cementing work with unmatched efficiency.
- Running formation testing tools to provide well owners with specific aquifer information.
- Acidizing and fracturing for increased yield by well stimulation.
- Employing the Hydro-Sonic Redevelopment technique for fast, efficient, and economical clearing of plugged wells.



The combined experience, facilities, and teamwork of the world-wide Halliburton organization are dedicated to assist you with your specific well problems. Use this helpful service . . . it's as near as your phone!



WATER WELL SERVICES

Halliburton
COMPANY . DUNCAN, OKLAHOMA

A Dynafog unit spreads bad news for the mosquitoes in this district.

The Best Way to Kill Mosquitoes

Some four years ago, Florida investigators determined what they felt was the best method of killing adult mosquitoes. They did the work with ground-dispersed aerosols and achieved excellent control as far as 1,000 feet from the point of discharge by using only 0.2 of a pound of aerosols per acre covered. At 660 feet from the discharge point, they were able to reduce the use of the aerosols by half.

The Florida investigators used a TIFA[1] fogger in this work. For maximum efficiency, they found that these operational conditions were required:

- **Temperature—1,000°F**
- **Formulation pressure—25 psi**
- **Discharge rate—40 gallons per hour**
- **Vehicle speed—5 miles per hour**

For best results at minimum costs, they found that the foggers should be operated when:

- **The temperatures at 6 inches and 6 feet above ground correspond.**
- **The wind is less than ten miles per hour.**
- **The wind is blowing as nearly at right angles to the direction of the vehicle as possible; never fog on streets parallel to the direction of the wind.**

A street should be fogged only once. Treating both sides of the street serves only to double the dosage and cost of operation. The adulticide spray should be economical, safe, knock down insects rapidly, have high killing power, low odor, and good stability. The experimental work showed that Lethane[2] 384 and malathion readily meet these requirements. The first gives quick knockdown and the second increases the total kill of the mosquitoes. A good mixture would consist of:

Malathion 90% concentrate	**3**	**gallons**
Lethane 384	**3**	**"**
#2 fuel oil	**94**	**"**

If desired, one can omit the Lethane, replacing either with an equal volume of malathion or fuel oil.

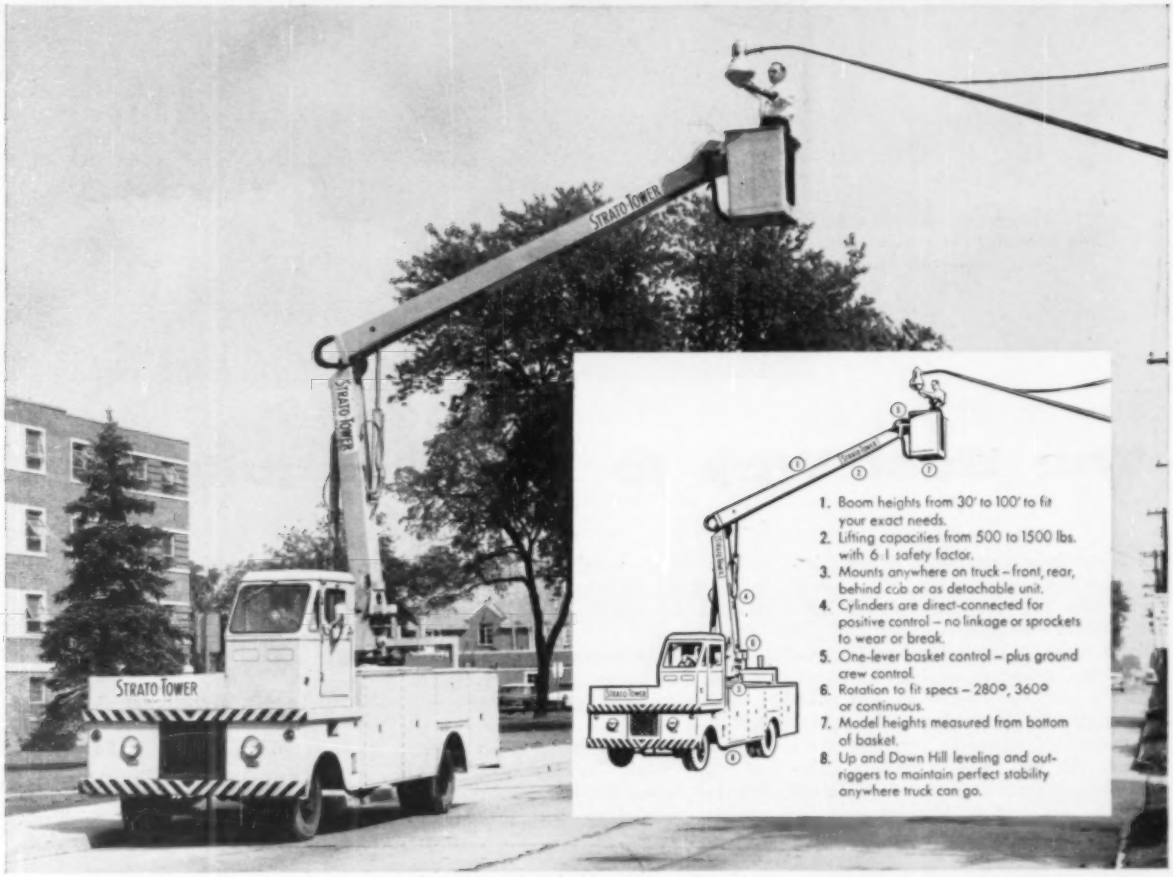
The applications are most effective when the wind velocities are under three to four miles per hour. The rate of application should be 25 to 35 gallons per hour, or five to seven gallons per linear mile with the fogging machine moving at five miles per hour.

Mist spraying can be conducted

(Continued on page 143)

The wind and the weather were perfect when this TIFA applicator went to work here.

OTTAWA



1. Boom heights from 30′ to 100′ to fit your exact needs.
2. Lifting capacities from 500 to 1500 lbs. with 6-1 safety factor.
3. Mounts anywhere on truck – front, rear, behind cab or as detachable unit.
4. Cylinders are direct-connected for positive control – no linkage or sprockets to wear or break.
5. One-lever basket control – plus ground crew control.
6. Rotation to fit specs – 280°, 360° or continuous.
7. Model heights measured from bottom of basket.
8. Up and Down Hill leveling and outriggers to maintain perfect stability anywhere truck can go.

up to 100′ extension to your arm —

STRATO-TOWER

With a simple flick of the exclusive Strato-Tower single-lever control, work crews position themselves in the exact elevated spot they need. They do it safely, too...Strato-Tower's exclusive Up and Down Hill leveling lets the crew work *anywhere* the truck can go. Hydraulic outriggers insure stability—fiberglass booms and buckets isolate crews from high voltage – insulated booms protect on low voltage lines. And, Strato-Towers are structurally built with a six to one safety factor – an extra margin of safety.

See your Ottawa Distributor or send the coupon for full details on the Ottawa Strato-Tower. Equipment Division, Young Spring & Wire Corporation, Bowling Green, Ohio.

OTHER EQUIPMENT DIVISION PRODUCTS

OTTAWA

- HYDRA-HAMMER – Pavement Breaker and Compactor
- MARAUDER – Self-propelled Backhoe and Loader
- BACKHOES AND LOADERS – for most wheel and crawler tractors

DAYBROOK

- POWER CRANES – 7000 lb. lifting capacity
- POWER GATES® – 800 to 5000 lb. capacity
- DUMP BODIES – 1½ to 27 cubic yards
- HYDRAULIC HOISTS – From 3 to 39 tons

EQUIPMENT DIVISION
MANUFACTURERS OF
DAYBROOK
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OTTAWA
CONSTRUCTION EQUIPMENT

YOUNG
SPRING & WIRE
CORPORATION

SEND ME MORE FACTS ON THE OTTAWA STRATO-TOWER

☐ Complete descriptive literature
☐ Specifications of the.....-foot boom
☐ Name of my nearest Ottawa Dealer

Name.....
Address.....
City..... State.....

(Continued from page 141)

in the face of wind velocities of as much as ten mph. These units can deliver from 12 to 150 gallons of spray per hour at speeds as high as 10 mph. Generally large-capacity machines are mounted on trucks or trailers. They will apply combinations of Malathion and Lethane, or malathion alone at rates of ½ pound of active material per acre in either water or fuel oil.

Malathion formulations in certain types of #2 fuel oil form sediment which tends to clog strainers and jam valves in application equipment. An additive, Thiosperse[3], will improve solubility of malathion in fuel oil and help prevent this sediment formation. The additive has no adverse effect on chemical stability or biological activity of malathion.

Thiosperse, used at the rate of 0.1% to 0.5%, based on the final formulation, should be sufficient. To estimate the amount needed with a particular fuel oil, first prepare the fuel-oil test samples containing 0, 0.1%, 0.25% and 0.5% of additive. Next, add the desired amount of malathion to each test sample. Observe the formulations for 24 hours for any sedimentation or sludge formation. Formulations remaining clear contain sufficient Thiosperse.

The acid test for any control chemical used in mosquito work is effectiveness, and in this area malathion programs are showing up to 30% better killing efficiency than the so-called standard programs.

Important is the safety factor of malathion, safety to persons involved in its application or coming in contact with treated areas.

Tests have shown that while it has proved effective against the mosquitoes, single applications of the insecticide in amounts used for control work are no hazard to normal human populations. ◄◄

---

[1]A product of Todd Shipyards Corp., Brooklyn, N. Y.

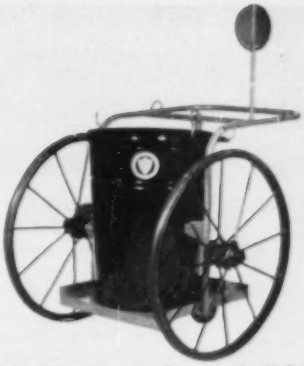
[2]Trademark, Rohm & Haas Co., Washington Square, Philadelphia, Pa.

[3]Trademark, American Cyanamid Co., 30 Rockefeller Plaza, N. Y. 20, N. Y.

Heads P. P. A.

Charles A. Meyer, assistant secretary and chief examiner of the Detroit Civil Service Commission, has been elected president of the Public Personnel Association at its convention in New York City. ◄◄

Street Sweepers'
CAN CARRIERS



TARCO "Street Sweepers' Friend" Can Carriers are the **toughest, best balanced, easiest pushing carts** you can buy.

All welded steel construction . . . no bolts, no rivets, no dangling chains. Choice of big, easy-to-push wheels with either **pneumatic, solid rubber** or **plain steel tiring on roller bearings.** Full swiveling caster wheel. Silent can-clamp. Tool hooks. Traffic warning flag.

Make it easy on yourself all way round . . . buy longer lasting can carriers that look good; that will be less tiring for your men to push and use. Buy TARCO "Street Sweepers' Friend" Can Carriers. See your nearest TARCO dealer or write for details.

TARRANT MFG. CO.
23 Jumel Place, Saratoga Springs, N.Y.

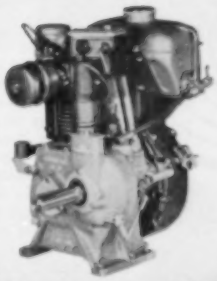
HERE'S HOW 800 CITIES SOLVED THEIR STUMP PROBLEM...

Original Low Cost Vermeer
POW-R-STUMP CUTTER
Rips Stumps To Shreds In Minutes!

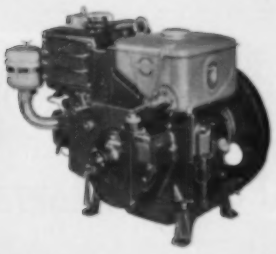
You'll save hundreds of back-breaking man-hours and thousands of dollars annually . . . with a Vermeer Pow-R-Stump Cutter. The choice of tree experts everywhere! It's the modern way, the economical way to remove ugly stumps. A one-man operated unit. Removes stumps 10" below the ground. Write for complete information, low price and FREE demonstration.

VERMEER MANUFACTURING CO.
1452 W. WASHINGTON, PELLA, IOWA

BIG JOB...SMALL ENGINE?
YANMAR
DIESEL DOES IT!



SAFE
COMPACT
DEPENDABLE
VERSATILE



4-Cycle — AIR-COOLED — Single Cyl. 2 to 4½ BHP — 2000/3000 RPM. LIGHT WEIGHT — EASY STARTING. Especially recommended for PORTABLE & EMERGENCY EQUIPMENT.

A Precision Product of the New Japan. Made to U.S. specifications by the world's largest manufacturer of small diesels. COMPLETE ACCESSORY LINE. All engines and parts stocked in the U.S.A.

4-Cycle — WATER-COOLED — Single Cyl. 2 to 8 BHP in 2000 RPM range. COMPLETELY SELF CONTAINED. Easy starting — smooth running for GENERAL PURPOSE APPLICATIONS.

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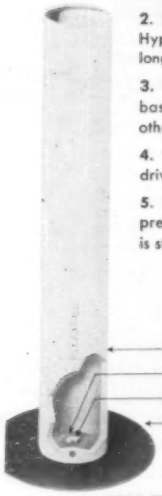
The ONLY Lane Delineator engineered from top to bottom for long-lasting life in any climate . . . at a reasonable price

ONLY **Fixatron*** Trade-Mark **TRAFFIC MARKERS GIVE YOU...**

1. **FLEXIBILITY**—In all temperature ranges, quick "snap-back" action is assured because of tapered design.
2. **DURABILITY**—Highest quality, synthetic RUBBER (Du Pont Hypalon) and painstaking engineering make this the longest-lasting traffic marker ever produced.
3. **REMOVABLE IN SECONDS**—by one bolt, or nut. Flat base plates can be left in street and markers moved to other areas. Excellent for changing traffic patterns.
4. **SAFETY**—Fixatron's flat base plate cannot divert driver's steering control if accidentally driven over.
5. **DESIGN**—Bolt-retained, spring washer creates ring-like pressure around base preventing displacement if Fixatron is struck.

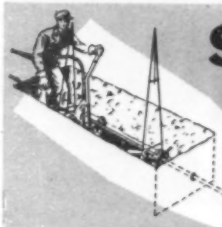
Model FM-2 Fixatrons are packed 50 to carton. Smaller quantities upon request. Price $4.95 each, F.O.B. Glenside, Pa.



*Patents Applied For

NATIONWIDE TRAFFIC ENGINEERING CO., INC. Makers of Fixatron TRAFFIC MARKERS

2535 Mt. Carmel Avenue, Glenside, Pennsylvania



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BY USING HYDRAUGER* Reg. U. S. Pat. Office

OPEN HOLE

***EARTH BORING TOOL**

LOWEST COST FOR PIPE INSTALLATION

HYDRAUGER—

- *ELIMINATES TRENCHING*
- *REDUCES COSTS UP TO 90%*
- *BORE—UP TO 250 FT.*
- *2 INCH TO 24 INCH*
- *NO FUMES OR SHOCKS*

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HYDRAUGER CORP., Ltd., 681 Market St., San Fran. 5, Calif.

Please send without obligation, to me, the HYDRAUGER BOOKLET which shows relative costs and speeds of BORING as well as specifications of various Hydrauger models.

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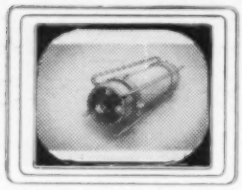
PIPE INSPECTION BY TV

THE FIRST REAL IMPROVEMENT IN PIPE INSPECTION SINCE 1867



Front view of the completely transistorized N.P.R.C camera, showing lens and lights.

★ **SPOT PIPE BREAKS**

Closed-circuit TV viewing lets you see for yourself what the trouble is and where it is, in pipe as small as 4" in diameter.

★ **SAVE MONEY**

One city spotted and repaired breaks in one bad stretch of sewer line for $2,500. Bids for the same job done the standard way were more than $200,000. Savings: $197,500.

The technician, seated in N.P.R.C.'s mobile viewing room, can stop the camera at any time to make still pictures of breaks.

CALL COLLECT
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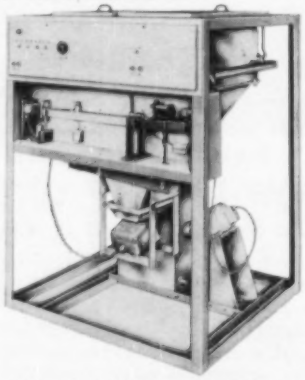
1000 SOUTH WESTERN AVENUE
CHICAGO 12, ILLINOIS

FOR ACCURATE FEEDING OF DRY CHEMICALS

SYNTRON DIMINISHING BATCH

WEIGH FEEDER MACHINES

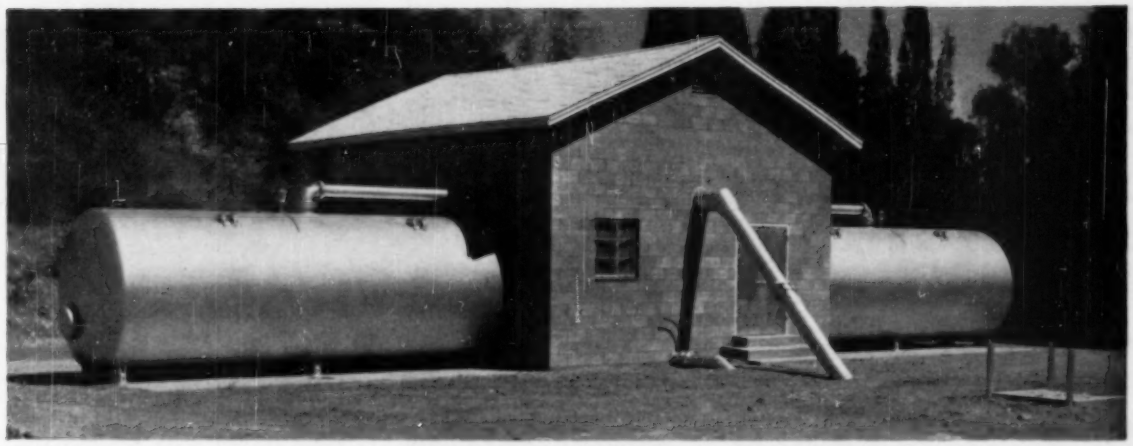
Designed for accurate feeding of chemical magnets required in water filtration and sewage treatment plants. Syntron Diminishing Batch Weigh Feeder Machines provide a reliable continuous feed of materials in pounds per hour at any desired predetermined rate from 3 lbs. to 300 lbs. per hour.



Write for a Syntron Catalog today

If your city is facing such a problem or has an application requiring accurate, continuous weigh feeding, consult your Syntron representative for information and quotations.

SYNTRON **SYNTRON COMPANY**
430 Lexington Avenue • Homer City, Pa.

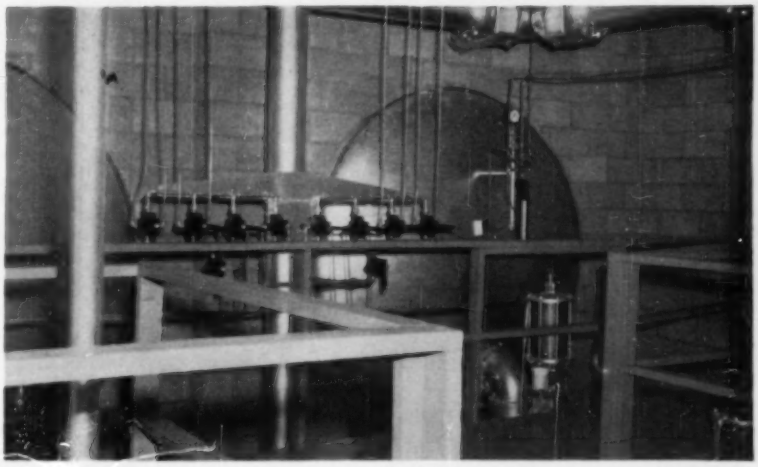


Although the original construction included only three filters, the piping together with the wall construction provides for the addition of a fourth unit.

San Bernardino's "One-Pump" Filter Plant

. . . takes advantage of the natural water elevation to operate its entire system except filter backwash

By JAMES H. PAULIN*



Interior furnishings and equipment include only the essentials for good operation.

Although wells serve as San Bernardino's primary source of water, the city also utilizes surface water collected by diversion boxes in the various streams of the Devil Canyon area. In the water collected from this surface flow, there is almost always a certain amount of foreign material that does not settle out in a storage reservoir and could conceivably enter the distribution system. This factor, combined with the State Department of Public Health recommendation for full treatment of surface waters, brought about the decision to construct a filter plant.

The recently constructed Devil Canyon Filter Plant supplies the City of San Bernardino with a usable flow varying from 300 gpm to 2,000 gpm, disregarding peak runoff periods during storms. Diversion boxes in the various streams serving the plant collect the surface runoff and a 12-inch steel pipeline carries it to the Screening and Chlorination House. Here the water is chlorinated by means of a Wallace & Tiernan chlorinator regulated by a Foxboro float-and-cable-type flow meter equipped with a vacuum transmitter, and the larger particles are removed. The latter is accomplished as the water passes through a series of five screens of varying gauges.

After leaving the screening section, the water enters a weir chamber which allows the first 1,800 gpm to flow to the filters. The excess returns to the stream channel.

Pressure Filters

The screening and chlorination house is located approximately 74 feet higher in elevation than the filter tanks, resulting in a maximum pressure available at the filters of 32 psi. The filter plant consists of three pressure units made by the California Filter Co. Each one is eight feet in diameter by 27 feet

(Continued on page 146)

* Mr. Paulin holds the position of civil engineering associate with the Municipal Water Department of San Bernardino, Calif.

(Continued from page 145)

long, containing a filter-bed area of approximately 200 square feet each. The filter beds are made up of an eight-inch layer of ¾x½-inch gravel on a concrete bed; a six-inch layer of ¾x⅜-inch gravel; an eight-inch layer of ¼x⅛-inch gravel; and finally 30 inches of sand. This filter sand has an effective size of 0.45 mm to 0.55 mm, and a uniformity coefficient of 1.6 to 1.8.

The operators control the flow of water through the plant by means of eight-inch hydraulically operated Iowa gate valves. A Clayton altitude-type valve located immediately upstream from the screening chamber provides the hydraulic pressure needed to operate the valves. It maintains a constant pressure of 35 psi, which is sufficient to operate the chlorinator. A separate pressure line to the filter plant delivers water to the valve cylinders at the rate of approximately 65 psi.

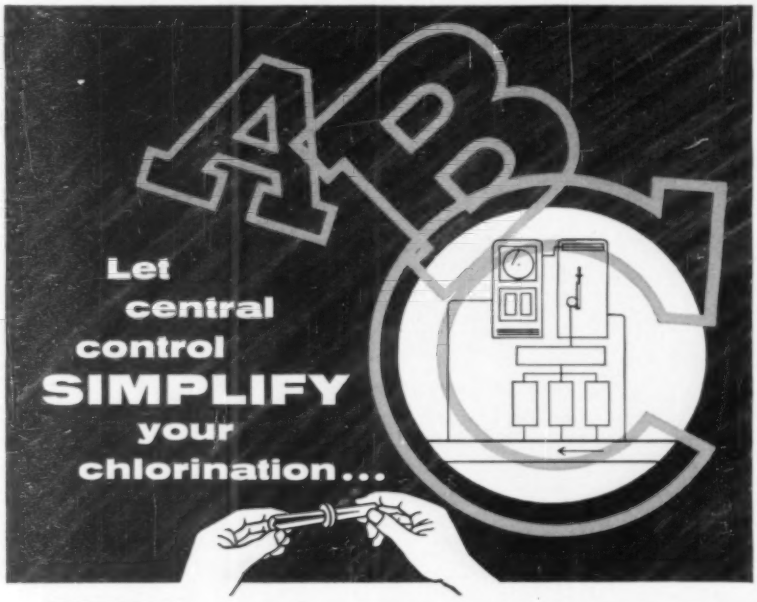
This same line continues about another 300 feet to serve the residence occupied by the Devil Canyon Plant operator.

A second Clayton valve installed on the effluent line of the filter plant maintains a constant pressure on the tanks, acts as a rate control valve, and prevents the tanks from becoming air bound. The filter effluent discharges into an existing reservoir where the water is chlorinated for a second time. From this reservoir the water enters the distribution system.

The only pump required in the Devil Canyon plant is for filter backwash purposes. This consists of a Worthington centrifugal pump rated at 2,000 gpm at 70-foot head. It takes suction from the filtered-water reservoir. The pump controls are located at the filter house, and by regulating the hydraulic valves, the operator can control the rate of flow quite readily. A monometer connected to an orifice in the pipe line provides a visual indication of the backwash rate.

The contract cost of the plant, excluding the piping and valves outside of the buildings, came to $53,670. Construction started in November 1959, but because of delays caused by the steel strike it was not completed until early March 1960. The building is of concrete block with a Johns-Manville roof.

Plant operation over the past six months has been most satisfactory, and the surface supply serves as a much needed supplement to our primary well supply. ◄◄



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Cities, County Cooperate

As urban areas grow, counties will perform from eight to fifteen functions for the cities within its boundaries, so advised William MacDougall, general counsel and manager of the County Supervisors' Association of California, at the recent meeting of the International City Managers' Association in San Francisco.

Those functions that Los Angeles County performs for the cities in its borders include public health (most numerous), tax assessment, housing of prisoners, elections, library, and law-enforcement communications. Los Angeles County performs an average of ten services and can perform 21.

This cooperation depends on the quality of service that the county is able to provide, Mr. MacDougall advised. It is the basis on which small cities in metropolitan areas can exist as autonomous units. ◄◄

ZONING AND PLANNING DECISIONS

Edited by NORMAN WILLIAMS, Jr.

Elimination of Billboards Along Highway—Discriminatory Treatment

OREGON. *Webb* v. *Oregon*, 340 Pacific (2d) 968 (Supreme (highest) Court, June 24, 1959).

A 1955 Oregon statute regulated the erection and maintenance of billboards within view of public highways, and specifically forbade billboards, located within ⅛ mile of each other, which advertised a single commercial enterprise. Such signs were subject to immediate removal, but other signs were given a longer grace period, i.e., five years. The owner of a zoo along such a highway, who had a large number of such billboards so located as to violate these restrictions, challenged the restrictions and sought to enjoin removal of his signs, on the ground that the restrictions did not apply to all existing billboards, but only to those which advertised a single commercial enterprise.

In the opinion, the Court held that the grant of a differential grace period for other signs, as compared with signs advertising a single business, was an arbitrary and unlawful discrimination.

> ". . . But when the legislature decided to grant a period of grace in favor of existing signs, it was bound to treat all alike, unless there was some reasonable basis for granting it to some and withholding it from others. No such basis has been suggested in argument, and none occurs to us.
>
> ". . . So far as we are advised, there is nothing in the nature of signs used to advertise the business or products of a single commercial enterprise which the legislature could have considered more likely to interfere with 'the safe and efficient use, and orderly appearance of the * * * highways' than signs erected and maintained by different advertisers. There is no point of differentiation which makes immediate removal of the signs of one class expedient, desirable or necessary, but not signs of the other. It follows that the classification cannot be sustained and the statute, insofar as it ordains immediate removal of plaintiff's signs while permitting those which do not conform to different provisions of the statute to remain for five years, contravenes the equal protection clause of the Fourteenth Amendment of the Constitution of the United States and is void."

This decision again re-emphasizes the importance, in drawing zoning ordinances, of being sure that differential treatment is based upon logical distinctions. Frequently this is not so in zoning regulations, and every once in a while the courts catch up with such provisions.

Super-Highway as a Nuisance in a Residence District

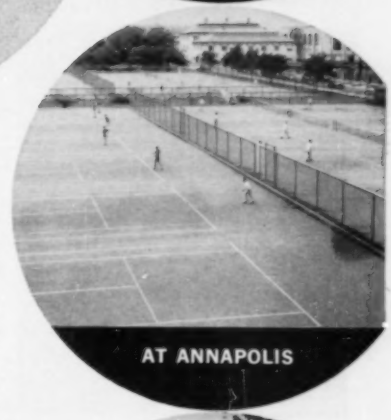
NEW YORK. *Mathewson* v. *New York State Thruway Authority*, 196 New York Supplement (2d) 215 (Supreme (lower) Court, December 31, 1959).

The New England Thruway, a new super-highway intended to connect the Connecticut Turnpike with the super-highway complex centering at the Triborough Bridge in New York City, runs through a single-family residential area (and zoning district) in Pelham Manor, just north of the New York City line. Because of the noise and lights resulting from use of the highway by trucks and buses at night, a group of these single-family residential owners in Pelham Manor brought an action for an injunction against such use of the Thruway. Defendants moved to dismiss the complaint, partly on the ground that the Thruway Authority could not be sued under the doctrine of sovereign immunity, and partly on other grounds. The Court decided (a) that the complaint should not be dismissed, but also (b) that plaintiffs had not made out a sufficient case for a temporary injunction; and the case was sent to trial on the facts.

On the question of sovereign immunity, the Court pointed out that the law cre-

(Continued on page 148)

LAYKOLD TENNIS COURTS



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(Continued from page 147)

ating the Thruway Authority explicitly provided that the Authority could sue and be sued; and this was held to constitute a waiver. As for the requested injunction on the grounds of nuisance, the Court held that the Thruway Authority was responsible for operation of the Thruway, and that circumstances might exist where a limited injunction might be appropriate against conditions existing on the Thruway. The wording of the opinion gives rather strong emphasis to the rights of a residential property owner in such a situation.

"The general statutory authority conferred upon it to construct, maintain and operate a super-highway for through traffic does not confer upon it a license to locate and use the highway in such a way as to constitute a nuisance resulting in substantial injury to private property."

"The noise, fumes and lights from the traffic of trucks and buses can be very annoying to persons residing along a highway. It is clear, however, that the same may not be the basis of right to legal relief where such traffic is merely incident to the ordinary and reasonable use of a local or state highway. But, it is clear also that, while one may be expected as a part of his contribution to our way of life to assume incidents of ordinary highway traffic in the vicinity of his home, he may have a just complaint against the laying down of a super-highway near his door and the use of the same with the present day type of huge buses and trucks operated at high speed in the interests of commerce. Such a highway, and such use thereof, if seriously affecting his health and comfort, and the value of his property may constitute an actionable nuisance.

"It is true that there is the necessity in the interests of the public good that heavy truck and bus traffic be adequately taken care of in and through the state. The Thruway was properly designed and is properly being operated for the purpose, among others, of taking care of such traffic. It is clear, however, that, in the location and use of the same, the Authority was and is bound to take into consideration the rights of individuals. It is in many cases difficult to draw the line, and to determine whether a particular use is consistent with the duties and burdens arising from vicinage, or whether it inflicts an injury for which the law affords such a remedy. . . . If the plaintiffs are so substantially damaged by an unreasonable location and use of the Thruway that they are being deprived of the ordinary enjoyment of their properties without just compensation, they should not be without remedy. Of course, an injunction, if warranted, would be required to be limited and conditional, and the extent and conditions of the same can only properly be fixed following a full consideration of relevant facts and issues. And if it appears that it is not practical for the Thruway Authority to so restrict and regulate truck and bus traffic thereon so as to protect plaintiffs in their rights, the judgment hereon may properly take the form of providing for a fixing of damages to plaintiffs' properties and for payment of same."

Extra-Territorial Zoning—Sale of Liquor

NEW MEXICO. *City of Carlsbad* v. *Caviness*, 346 Pacific (2d) 310 (Supreme (highest) Court, November 13, 1959).

This case involved the proposed transfer of a retail liquor establishment from a permitted location within the city to a new location about half a mile outside the city limits. The Carlsbad zoning regulations prohibited the sale of liquor anywhere within the city's "jurisdictional area," except for a specified six-block area within the city. The city argued that the extra-territorial provisions of the state's enabling legislation for planning and subdivision control ("platting") should be interpreted to extend its zoning jurisdiction as well to cover an area three miles outside the city limits.

In the opinion, the Court went into a long and rather abstract discussion as to whether the word "planning" should include "zoning," and cited other judicial decisions to the effect that these terms were "separate and distinct." Moreover, it was pointed out that the zoning enabling legislation—a separate title—explicitly omitted a grant of extra-territorial zoning powers to municipalities, and in fact by a 1959 amendment had explicitly granted such power to counties. The latter point is conclusive on the narrow legal question at issue; the city had no zoning power to control the location of liquor establishments outside the city limits. However, the existence of a controversy of this nature, requiring a State Supreme Court to settle it by reference to what other courts have said in other circumstances, is a sad commentary on the extent of public understanding of the relation between zoning and planning.

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LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Annexation—
Only Electors of Area Affected Can Vote

In petition to determine whether portion of township should be detached and annexed to city, held only electors within portion of township to be annexed could vote on such issue. *Warren Products, Inc.* v. *City of Northville*, 96 N.W.2d 764 (Mich., June 6, 1959)

City Employees—
Uncashed Retirement Checks Not "Money Received"

Where testator was member of city retirement system and elected to receive monthly allowances and at death monies remaining were to be paid to his designees and he died without cashing checks received by him, held such checks were not "money received" and were due to designees under contract and not due his estate. *Connolly* v. *Connolly*, 187 N.Y.S.2d 18 (N. Y. Sup. Ct., App. Div., May 11, 1959)

Civil Service—
Council Cannot Create New Offices

Where city council authorized creation of or appointment to several new positions without regard to civil service provisions of amended charter, held such ordinance invalid. *Sermon* v. *City of Duluth*, 97 N.W.2d 464 (Minn., June 19, 1959)

Junkyards—Industrial Scrap Yard Not Included

Where ordinance provided for licensing of junkyard operators under statute permitting licensing of dealers in junk and secondhand articles, held ordinance not applicable to operator of industrial scrap yard. *City of Kewanee* v. *Riverside Indus. Materials Co.*, 158 N.E.2d 86 (Ill. App., May 6, 1959)

Incorporation—
Referendum Election Ordered

In mandamus action requesting that board provide for referendum election to determine whether certain territory should be incorporated, held where board had before it all documents required it had no discretion to refuse calling referendum. *Harley* v. *Town Board of Delafield*, 96 N.W.2d 363 (Wis., May 5, 1959)

Parks—Dynamiting Causes Injury—City Not Liable

In action for damages for injuries to property allegedly caused by subterranean tremors resulting from dynamiting in developing nearby public zoo, held city not liable. *Crisafi* v. *City of Cleveland*, 158 N.E.2d 379 (Ohio, April 22, 1959)

Parks—Injury on Lake—City Not Liable

In action for wrongful death of ice skater struck by motorcycle which went out of control on city lake during race conducted by park district, held such activity was governmental function and city not liable. *List* v. *O'Connor*, 158 N.E.2d 103 (Ill. App., May 6, 1959)

Schools—
Vaccination Requirement Valid

In action for injunction restraining defendant from entering her children in school because as Christian Scientist she refused to have her children immunized from smallpox and diptheria, held medical requirement as prerequisite for school attendance was valid. *Board of Education of Mountain Lakes* v. *Maas*, 152 A.2d 394 (N.J. Super. Ct., App. Div., June 22, 1959)

Zoning—Prohibition of Trailer Park In Agricultural Zone Invalid

In proceeding to compel town officials to issue permit for maintenance of trailer park in district zoned residential agricultural, held ordinance prohibiting trailer parks in such district was unconstitutional. *Stevens* v. *Stillman*, 186 N.Y.S.2d 327 (N.Y. Sup. Ct., Erie Cty., June 1, 1959)

Zoning—
Rezoning Procedure Held Invalid

Where statutory provision conditioned rezoning on consent of owners of two-thirds of property within 100 feet of real estate to be rezoned, held such requirement invalid for unlawfully delegating power. *State* v. *City of Minneapolis*, 97 N.W.2d 273 (Minn., June 19, 1959)

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RECENT CITY MANAGER APPOINTMENTS

C. W. Masonheimer
Watsonville, Calif.

H. H. Bowers, Jr.
Port Lavaca, Tex.

G. T. Meholick
Portsmouth, O.

M. A. Butcher
Montgomery Cty., Md.

Clovis D. Mann
Burkburnett, Tex.

C. F. Mann
Rittman, O.

DON F. ALLARD, assistant to the manager of Columbia, Mo., was appointed manager of Flat River, Mo., succeeding Victor Bortnick.

HUGH H. BOWERS, JR., director of the Industrial Promotion Div., Chamber of Commerce of the New Orleans Area, has been appointed manager of Port Lavaca, Tex., succeeding Milford Riggs, Jr.

WALTER J. BROWN, JR., city manager of Opa-Locka, Fla., for the last three years, was recently appointed manager of Eau Gallie, Fla., succeeding Clark Maxwell. Mr. Brown was previously administrative analyst in Kansas City, Mo.

FRANK H. BUCK, of Wilmington, Del., has been appointed manager of Rehoboth Beach, Del., succeeding William A. McWilliams.

MASON A. BUTCHER, director of the Department of Public Works of Montgomery County, Md., has been appointed county manager, succeeding Melvin L. Reese. Mr. Butcher, who is an engineer, was previously acting county manager.

ROBERT CARLESON, senior administrative assistant to the manager, Torrance, Calif., has been appointed manager of the new city of San Dimas, Calif. Mr. Carleson was previously city clerk and assistant at Claremont and administrative assistant to the public works director, Beverly Hills, Calif.

W. M. COTTON has been appointed manager of Sault Ste. Marie, Mich., succeeding Ralph Speers. Mr. Cotton was formerly in charge of community relations for the National Cash Register Co. in Dayton, Ohio.

NORMAN T. DAWE, assistant general manager of Westmount, Quebec, Canada, was appointed as manager of that city, succeeding Thomas J. Hughes, who retired.

HERBERT L. DERRICK, administrator of Ontario, Ore., has been appointed manager of Twin Falls, Idaho, succeeding Joseph H. Latimore.

WALTER F. JOHNSON, formerly manager of Abilene, Atchison and Emporia, Kan., and Ft. Pierce, Fla., was recently appointed manager of Jacksonville Beach, Fla., succeeding the late Wilson C. Wingate. Mr. Johnson has had 37 years of public service experience including 19 as a manager.

CHARLES A. KEENE has been appointed manager of Sebastopol, Calif., succeeding Milton S. Hetzel.

LELAND F. KRAFT, former city manager of Wood River, Ill., was recently appointed the first city manager of Walla Walla, Wash. Mr. Kraft was previously assistant city manager of University City, Mo.

CARLTON W. LAIRD, manager of Whitehall, Mich., was appointed manager of Wood River, Ill., succeeding Leland F. Kraft. Mr. Laird was previously personnel director and office manager in Madison, Wis.

ERNEST L. LIBBY has been appointed manager of Searsport, Me., succeeding Dudley Foley. Mr. Libby was previously manager of New Gloucester, Me., and Meredith, N. H.

CHARLES F. MANN, administrative assistant of Rittman, Ohio, has been appointed the first manager of that city.

CLOVIS D. MANN, assistant manager of Wichita Falls, Tex., has been appointed manager of Burkburnett, Tex., succeeding A. W. Newman.

C. W. MASONHEIMER, assistant manager of Modesto, Calif., has been appointed the first manager of Watsonville, Calif. Mr. Masonheimer was previously administrator of Pleasanton, Calif.

GEORGE T. MEHOLICK, manager of Marquette, Mich., is now manager of Portsmouth, Ohio, succeeding George W. Mingle, now manager of Delray Beach, Fla. Mr. Meholick was previously manager of Wakefield and Negaunee, Mich.

MAX L. MINOR, manager of Drumright, Okla., has been appointed manager of Sapulpa, Okla., succeeding Add Ellyson. Mr. Minor was previously administrative aide in Wichita, Kan.

JOSEPH McD. MITCHELL, manager of Marple Township, Pa., was recently appointed manager of Newburgh, N. Y., succeeding Albert J. Abrams. Mr. Mitchell was previously assistant manager and director of personnel of Culver City, Calif.

C. DEAN SMITH, manager of Sutherlin, Ore., is the new manager of The Dalles, Ore., succeeding Robert B. Laursen.

GEORGE D. SMITH, assistant manager of Tacoma, Wash., has been appointed manager of Yakima, Wash., succeeding the late E. J. Allison.

LOUIS J. SMITZES, manager of El Campo, Tex., was appointed the first manager of Boynton Beach, Fla. Mr. Smitzes previously served as the manager of Rosebud, Tex.

J. REG WAHL, manager of Morgan Hill, Calif., has been appointed administrator of Auburn, Calif., succeeding Donald R. Walker. Mr. Wahl was previously assistant city manager of Redwood City, Calif.

RICHARD H. WILSON, administrative assistant in San Antonio, Tex., has been appointed manager of Nevada, Mo., succeeding Thomas B. Herring.

ORIN F. NOLTING
Executive Director
International City Managers' Association

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Boynton Beach, Fla.

N. T. Dawe
Westmount, Que.

C. Dean Smith
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CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

Jan. 9-13—Washington, D. C.

HIGHWAY RESEARCH BOARD. Annual Meeting (Sheraton-Park Hotel). Dir., Fred Burggraf, 2101 Constitution Ave., Washington 25, D. C.

Jan. 18-20—Pocono, Pa.

NATIONAL RECREATION ASSOC. Middle Atlantic District. Annual Conference (Pocono Manor Inn). Dir., Field Services, Charles E. Reed, NRA, 8 W. 8th St., N. Y. 11, N. Y.

Jan. 19-20—New York, N. Y.

NEW YORK SEWERAGE & INDUSTRIAL WASTES ASSOC. Annual Meeting (Park-Sheraton Hotel). Exec.-Sec., R. C. Sweeney, New York State Health Dept., 55 Church St., White Plains, N. Y.

Jan. 26-28—Berkeley, Calif.

CALIFORNIA STREET & HIGHWAY CONFERENCE. Annual Meeting (Durant and Shattuck Hotels). Exec. Sec., Bob Glenn, ITTE, University of Calif., Berkeley, Calif.

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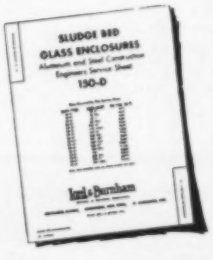

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Feb. 1-3—Indianapolis, Ind.

AMERICAN WATER WORKS ASSOC.—Indiana Section. Annual Meeting (Sheraton-Lincoln Hotel). Sec.-Treas., Chester H. Canham, 1339 W. Michigan St., Indianapolis 7, Ind.

Feb. 6-8—Buffalo, N. Y.

ASSOCIATION OF TOWNS OF STATE OF NEW YORK. Annual Meeting (Statler-Hilton Hotel). Exec. Sec., William K. Sanford, 91 State St., Albany, N. Y.

Feb. 6-8—Charleston, S. C.

ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS. Annual Meeting (Francis Marion Hotel). Sec., Treas., Ward K. Parr, Box 619, Ann Arbor, Mich.

Feb. 20-23—St. Louis, Mo.

AMERICAN CONCRETE INSTITUTE. Annual Meeting (Chase-Park Plaza Hotel). Sec.-Treas., William A. Maples, 22400 W. Seven Mile Rd., Detroit 19, Mich.

Feb. 25-Mar. 1—Los Angeles, Calif.

NATIONAL RECREATION ASSOC. California and Pacific Southwest District. Annual Conference (Statler Hotel). Dir., Field Services, Charles E. Reed, NRA, 8 W. 8th St., New York 11, N. Y.

Feb. 26-Mar. 2—Boston, Mass.

THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA. Annual Meeting (Statler Hotel). Exec. Dir., James D. Marshall, 1957 "E" St., N.W., Washington, D. C.

Mar. 3-4—Ft. Worth Tex.

TEXAS BEACH AND POOL ASSOC. Annual Meeting (Western Hills Hotel). Exec. Sec., G. R. Herzik, Jr., Texas State Health Dept., 1100 W. 49th, Austin, Tex.

Mar. 5-8—Atlantic City N. J.

AMERICAN ROAD BUILDER'S ASSOCIATION. Annual Meeting (Chalfonte-Haddon Hall Hotel). Exec. V.P., Maj. Gen. Lewis W. Prentiss, 600 World Center Building, Washington 6, D. C.

Mar. 8-10—San Francisco, Calif.

CALIFORNIA MUNICIPAL UTILITIES ASSOC. Annual Meeting (Sheraton-Palace Hotel). Exec. Sec., F. V. Frey, 100 N. Garfield Ave., Rm. 108, Pasadena, Calif.

Mar. 12-17—College Sta., Tex.

TEXAS WATER AND SEWAGE WORKS ASSOCIATION. Annual Meeting (Memorial Student Center, Texas A&M College). Exec. Dir., G. R. Herzik, Jr., 1100 West 49th St., Austin, Tex.

Mar. 13-16—Bal Harbour, Fla.

AMERICAN CONCRETE PIPE ASSOCIATION. Annual Meeting (Americana Hotel). Man. Dir., Howard F. Peckworth, 228 No. La Salle St., Chicago 1, Ill.

Mar. 15-17—Atlantic City, N. J.

NEW JERSEY WATER POLLUTION CONTROL ASSOC. Annual Meeting (Traymore Hotel). Sec., Anthony T. Leabey, P. O. Box 32, West Trenton, N. J.

***Mar. 19-22—Little Rock, Ark.**

ARKANSAS WATER AND SEWAGE CONFERENCE. Annual Conference (Marion Hotel). Exec. Sec., C. W. Oxford, Univ. of Arkansas, Fayetteville, Ark.

Clean Water Meters now in FIVE Minutes —

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Liquid Honing

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Modernize *your* meter cleaning — with Vapor Blast LIQUID HONING! Removes dirt, discoloration, scale, paint from corners, crevices, internal parts, chambers, thoroughly and effectively, with *no possibility* of scratching, scoring, or change in precision tolerances. Completely cleans a meter and all parts in less than FIVE minutes . . . Delivers cleaner, brighter water meters that look like new — to build customer satisfaction and confidence in your water meter department *economical* replacement program.

VB Liquid Honing is proving itself in Milwaukee, Cincinnati, and in towns in New Jersey, Georgia, Florida. Get the whole time-saving, money-saving story on VB LIQUID HONING in meter cleaning — or send a meter for Free laboratory demonstration cleaning.

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SOUTH GATE, Calif: 5335 Southern Ave.
SAN FRANCISCO, Calif.
ORLANDO, Florida

***Mar. 19-21—New Orleans, La.**
SOUTHERN ASSOCIATION OF COMMERCIAL ORGANIZATION EXECUTIVES. Annual Meeting (Sheraton-Charles Hotel). Pres., Fred Pool, East Texas Chamber of Commerce, Longview, Tex.

***Mar. 22-24—Chicago, Ill.**
AMERICAN WATER WORKS ASSOC.—Illinois Section. Annual Meeting (LaSalle Hotel). Exec. Sec., Dewey W. Johnson, 3440 Prudential Plaza, Chicago, Ill.

***Mar. 22-24—Atlantic City, N. J.**
ASSOCIATION OF HIGHWAY OFFICIALS OF THE NORTH ATLANTIC STATES. Annual Meeting (Traymore Hotel). Exec. Sec., Kenneth D. Rice, 1035 Parkway Ave., Trenton, N. J.

***Mar. 27-30—Lafayette, Ind.**
PURDUE ROAD SCHOOL. Annual Meeting (Memorial Center, Purdue Univ.). Exec. Sec., J. F. McLaughlin, Civil Engineering, Purdue University, Lafayette, Ind.

***Mar. 29-31—Atlantic City, N. J.**
NEW JERSEY MOSQUITO EXTERMINATION ASSOCIATION. Annual Meeting (Hotel Haddon Hall). Sec., Bailey B. Pepper, Agricultural Experiment Station, New Brunswick, N. J.

June 4-9—Detroit, Mich.
AMERICAN WATER WORKS ASSOCIATION. Annual Convention (Cobo Hall). Sec., Raymond J. Faust, 2 Park Avenue, New York 16, N. Y.

Sept. 24-27—Minneapolis, Minn.
AMERICAN PUBLIC WORKS ASSOCIATION. Annual Meeting (Municipal Auditorium). Exec. Dir., Robert D. Bugher, 1313 East 60th Street, Chicago 37, Ill.

***Sept. 24-28—Poland Spring, Me.**
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (Poland Spring House). Sec., Joseph C. Knox, 73 Tremont St., Boston, Mass.

***Oct. 9-12—Milwaukee, Wisc.**
WATER POLLUTION CONTROL FEDERATION. Annual Meeting (Milwaukee Auditorium and Schroeder Hotel). Exec. Sec., Dr. Ralph E. Fuhrman, 4435 Wisconsin Ave., Washington, D. C.

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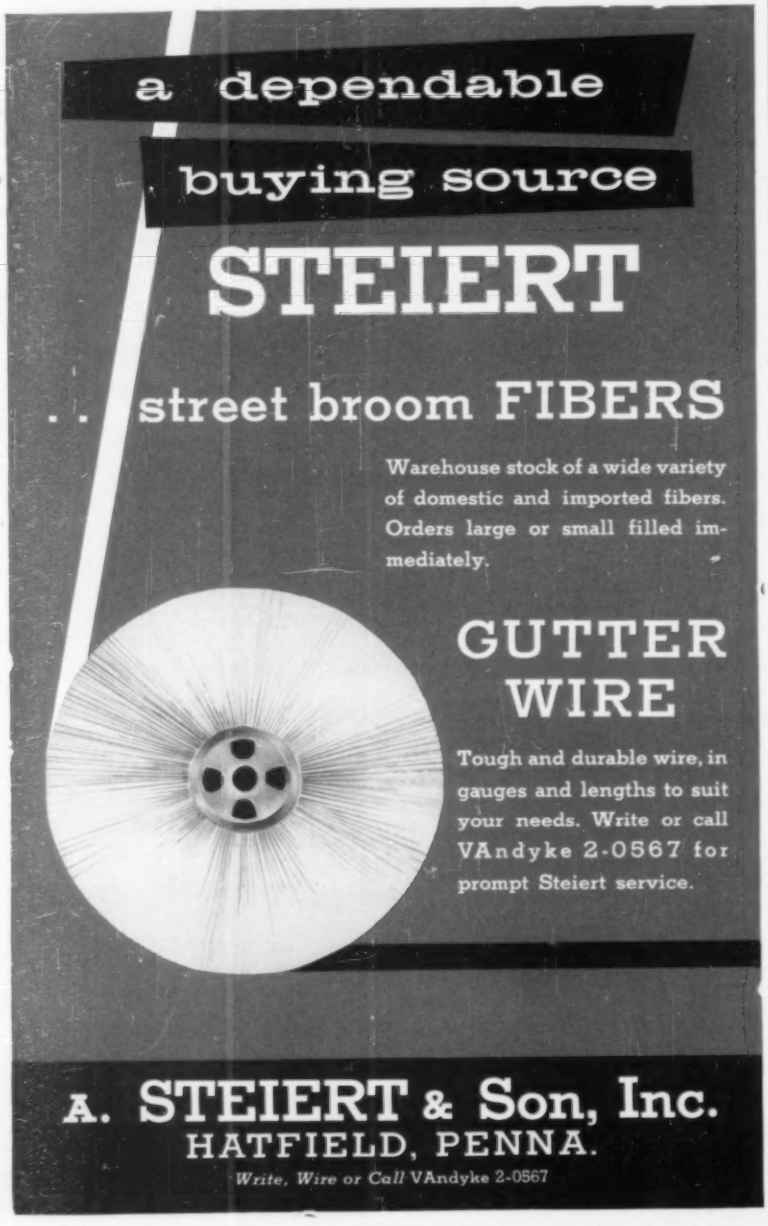
MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Revised Standard Methods

STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER: ELEVENTH EDITION—*American Public Health Association, 1790 Broadway, New York 19, N. Y. 1960. 626 pp. $10; $8 to members of APHA; AWWA; WPCF when remittance is submitted with order and order is sent to association of membership.*

This enlarged and extensively revised text incorporates the latest in methods and materials but retains the general format of the previous edition. It includes simple procedures used in the control of treatment processes as well as more complex tests used for special and research investigations. New data includes the E.D.T.A. method for determining hardness, calcium and magnesium; acceptance of the membrane filter as a standard method for the examination of water under specified conditions; and the designation "mg per liter" in place of "ppm." A new and separate part of the book covers radiological methods, which provide tentative procedures for the measurement of radioactivity in water and wastes. The current edition, like the tenth, is the joint responsibility of the American Water Works Association, the Water Pollution Control Federation and the American Public Health Association.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Urban Image

THE IMAGE OF THE CITY—*By Kevin Lynch. Technology Press of Massachusetts Institute of Technology and Harvard University Press, 79 Garden St., Cambridge 38, Mass. 1960. 194 pp. $5.50.*

This book is the result of an initial study to aid planners in answering such questions as: What does the image of the city actually mean? What can be done to make the image of the city more memorable?

Although it is an original study in this field it succeeds in defining the various elements that made a city's image vivid—an idea which the author terms "imageability." Three cities were studied: Los Angeles, Calif.; Boston, Mass., and Jersey City, N. J. Through personal interviews in these cities, together with a broad base of understanding of the arts and sciences, Mr. Lynch formulates a new approach to city planning. He also points out how such an approach has value in rebuilding or building our cities.

Administration

A DECADE OF COUNCIL-MANAGER GOVERNMENT IN PHOENIX, ARIZ.—*By Paul Kelso, Ph.D. Department of Government, University of Arizona, Tucson, Ariz. 1960. 66pp.*

A professor of government examines the remarkable record of Phoenix's progress over the past 10 years. At one time, this city was famous—or notorious—for its unstable government in which managers came and went like the rising and setting of the sun. Now the city, a two-time winner of the All-America City award, is an example of efficiency and is a remarkable training ground for young city managers.

Police Dogs

DOGS IN POLICE WORK: A SUMMARY OF EXPERIENCES IN GREAT BRITAIN AND THE UNITED STATES—*By Samuel G. Chapman. Public Administration Service, Chicago, Ill. 1960. 120pp., illustrated.* $3.

This book describes the advantages and disadvantages of a dog program; analyzes the factors police officials will need to consider in making a decision to adopt such a program; and outlines in detail the organization, costs, and operating procedures of a dog program.

Says O. W. Wilson, Superintendent of Police, Chicago, Ill., in the foreword: "Mr. Chapman has filled an urgent and timely need for the compilation of materials summarizing experience with police-dog programs in this country and abroad. Through review of these reported experiences and analyses of the various programs, police officials will be better equipped to evaluate the potential value of a canine corps in their own communities."

Housing

HOUSING CODES—*State of New York, Division of Housing, 270 Broadway, New York, 7, N. Y. 1960. 81 pp., 59 pp., 42 pp.*

New York State has expanded and revised its housing code to make it more useful to the small community. The present code includes those ordinances which cover mobile homes and mobile home courts.

Moreover, it has been revised to conform to the state building construction code, thereby facilitating its use among

the 337 municipalities already using the latter code. The housing code was originally published in 1958 to serve as a model for communities which were undertaking a program of conserving existing housing.

Flood Protection

FLOOD PROOFING.—*Department of Geography, Research Paper #65. The University of Chicago, Chicago, Illinois.* 1960. 198 *pp.* $4.

One way to reduce flood losses is to flood-proof the buildings subject to this danger. This text tells how and will be of interest to those cities in flood plain areas.

Zoning

A CITY SPEAKS—*Prentice-Hall, Incorporated, Englewood Cliffs, N. J.* 1960. 181 *pp.*

New York City is in the process of trying to blaze a new trail in zoning codes. Many thoughtful students of municipal government label the city's proposed zoning resolution as one of the most important steps ever taken in its long and impressive history. The present booklet is a collection of public statements excerpted from the records of the New York City Planning Commission. It makes stimulating reading, not only because of the vigor of the comments but also the widespread and diverse groups that lend support to the measure.

Strategic City

BERLIN—PIVOT OF GERMAN DESTINY—*By Charles B. Robson. The University of North Carolina Press, Chapel Hill, N. C.* 1960. 233 *pp.* $5.

This translation of a series of lectures on one of the most strategic cities in the free world today will make interesting reading by the practicing city administrator. Any time one feels that his municipal problems are overwhelming, he need only review the difficulties facing the administrator of fractured Berlin and take heart that things could be worse.

The background of Berlin, prior to World War I, makes remarkably thoughtful copy. One can trace similar paths taken by our own cities and see similar irritations between the central city and those beyond.

Perhaps most important, however, is that when dictatorship fastens itself upon a nation, free local government disappears. The two obviously cannot survive together.

Illegitimate Children

ILL-STARRED CHILDREN—*Cuyahoga County Welfare Department, 2400 Payne Avenue, Cleveland 14, Ohio.* 1959. 24 *pp.*

Cuyahoga County, Ohio, tries to tell dispassionately a simple but heartbreaking story of children born out of wedlock, many of whom seem destined for a life described as "emotionally disturbed." It confirms that most of the mothers have lived unhappy lives in broken homes and that many themselves were illegitimate. One observation is worth repeating—nine out of the ten unmarried mothers live in housing that can be described as substandard. Thus, with the elimination of bad housing, we can hope for the alleviation of this blight on society.

AIR POLLUTION

GENERAL—Air Pollution and Smog. Air Pollution Foundation, 2556 Mission St., San Marino, Calif. 1960. 20 pp.

FINANCE & TAXATION

PHILADELPHIA, PA. — Comparative Tax, Water and Sewer Costs for Philadelphia and 81 Other Municipalities in Pennsylvania, New Jersey, Delaware and Maryland. Pennsylvania Economy League, Liberty Trust Building, Philadelphia 7, Pa. 1960. 65 pp. $5.

PLANNING, ZONING, HOUSING

LAS VEGAS, NEV.—Las Vegas Plans Its Future. General Master Plan for the city of Las Vegas. City Plan Commission, City Hall, Las Vegas, Nev. 1959. 72 pp.

MINNEAPOLIS-ST. PAUL, MINN.—Metropolitan Land Study. Twin Cities Metropolitan Planning Commission, Griggs-Midway Bldg., University at Fairview, Saint Paul, Minn. 1960. 53 pp. $1.

REPRESENTATIVE MUNICIPAL BOND ISSUES

From November 1st to December 6th, 1960

Date of Issue	*Locality*	*Amount in $1000*	*Purpose*	*Term Yrs. to Maturity*	*Rate of Int.*	*Yield %*
11/ 1/60	Cook County, Ill.	25,000	Expressway	9	3.25	3.14
11/ 1/60	Montgomery Co., Ohio	1,243	Water and Sewer	11	3.50	3.28
11/ 3/60	Rochester, N. Y.	6,457	Bond and Tax Anticipation	¾	1.60	1.60
11/ 3/60	Trenton, N. J.	10,824	Various	13¾	3.10	3.05
11/ 9/60	Maui County, Hawaii	1,700	Public Improvement	13½	....	3.65
11/10/60	Eminence, Ky.	1,150	Industrial Building Revenue	....	....	4.46
11/10/60	Hampton, Va.	2,000	General Improvement	10½	3.20	3.18
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11/15/60	Hudson Co., N. J.	5,096	General Improvement	13½	3.50	3.46
11/16/60	Dayton, Ohio	4,800	Expressway, Water	11½	3.00	2.91
11/17/60	Cedar Rapids, Iowa	1,600	Sewer	10	2.80	2.76
11/17/60	Salina, Okla.	25	Sanitary Sewer	14	4.90	....
11/22/60	Bridgeport, Conn.	2,330	School, Pub. Imp., Sewer	9½	2.85	2.82
11/22/60	Dalton, Ga.	2,250	General Obligation Sewer	8½	....	3.52
11/29/60	Albuquerque, N. M.	4,500	Storm, Sanitary Sewer	....	....	3.73
11/29/60	Campbell and Kenton Ctys., Ky., Sanitation Dist. No. 1	1,300	Revenue	12½	....	4.18
12/ 1/60	Raton, N. M.	1,350	Electric Light and Power	....	....	3.89
12/ 6/60	New York, N. Y.	15,000	Tax Anticipation	½	2.13	2.13

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When there's a long, lawn trail a-winding . . . get

Simplicity

'700'

7 HP RIDING TRACTOR

Patented "Free-Floating" Mower Action Won't Scalp . . . Won't Scrape!

Velvet-smooth lawns? Simplicity's '700' Riding Tractor delivers them season after season! Three-gang mower mows 2¾ acres per hour . . . new 42" Rotary Mower follows ground contours, can't scalp, cuts within ⅝" of obstructions.

Ground-gripping stability, single-pedal clutch and brake control, convenient gear shift lever, 3 forward speeds and reverse . . . quick-change attachments for clearing snow, cutting weeds, many other jobs!

NEW '700' ATTACHMENTS FOR 1961!

46" SICKLE BAR — cuts at any angle to 30° *below* horizontal!

36" SNO-THROW — clears deep drifts quickly from walks, drives!

42" ROTARY MOWER — big-volume mower, takes 40° slopes easily!

110 Volt, 1500 Watt Mobile Generator — takes electric power to the job!

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6155 Spring St., Port Washington, Wisconsin
makers of Wonder Boy Riding Mowers, Roticul Tiller-Cultivators, Simplicity Garden Tractors

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—by actual test, it's the fastest chipper made.

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—simpler design and fewer moving parts than any other chipper. Means less down time.

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—blades are tapered and wedged.

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—permits larger bulk and larger limbs . . . up to 6″ diameter.

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—easy access and simplicity of service.

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—couples quickly and easily to various towing vehicles.

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—lower center of gravity, perfect tracking.

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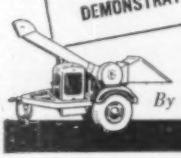

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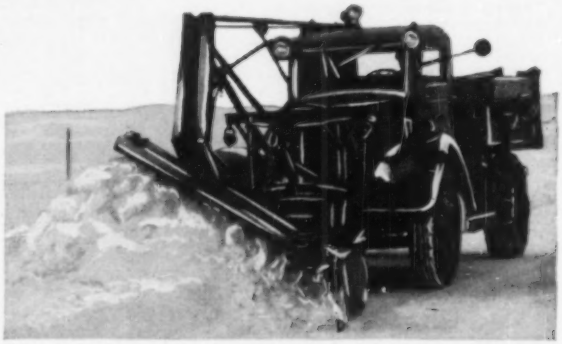
Hamilton St., Chalfont, Pa.

By Actual Test the Fastest Chipper Made

LOW SPEED or HIGH SPEED — same efficiency

FRINK

ONE-WAY SNO-PLOWS



Where low speeds and careful close-to-curb windrowing is a must, FRINK One-Way Sno-Plows neatly roll and deposit the snow for easy removal by loader. On more open thoroughfares, the same plow attacks at high speeds, throwing and spreading the snow way out to prevent formation of side banks and consequent drifting.

Increased curvature and taper in the rugged, highly efficient moldboard of FRINK One-Way Sno-Plows help keep snow from coming over the top at all speeds and prevent clogging in wet snow. Automatic trip mechanism safely rides cutting edge over obstruction.

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REVERSIBLE TRIP • LEVELING WINGS

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CLAYTON, 1000 ISLANDS, N. Y.

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EASTERN STEEL PRODUCTS, CO.
PRESTON, ONTARIO, CANADA

Brings Versatility to Dempster-Dinosaur

Dempster Brothers' new refuse handling unit, which has been designed for use with the company's super-size Dinosaur, enables the Dinosaur to serve as a complete system for both heavy materials handling and general refuse collection and disposal.

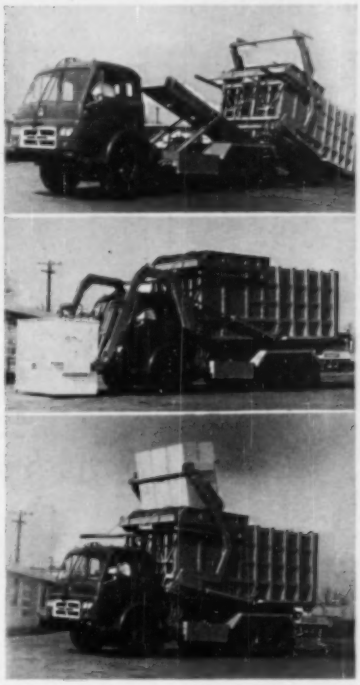
The Dinomaster consists of a compaction body and two cab-clearance lifting arms mounted on a standard Dinosaur frame. It can be operated as a self-loading packer when automatically pulled up on the Dinosaur skid frame and locked in place.

When in operation, it approaches a refuse storage container, engages the side channels, lifts it over the cab and empties the contents into its compaction body, where material is squeezed to a fraction of its former volume by action of the 60,000-pound thrust of the packer plate. Containers used are the standard type, designed for use with the Dumpmaster, and range from one-half through eight cubic yards capacity.

After the Dinosaur-mounted Dinomaster completes its work of collecting refuse and emptying it at the disposal site, it can be disengaged from the Dinosaur chassis and put on the ground at a central location and used as a transfer station for conventional packer trucks.

According to the manufacturer, the Dinomaster makes it possible for municipal operators to add to the utility of their Dinosaur equipment and set up their own system of refuse storage and collection for a relatively low investment.

A film showing the operation of this new equipment is available on a loan basis to interested municipal officials. A brochure describing the operation is also available. Write DEMPSTER BROTHERS, DEPT. DN-182, KNOXVILLE, TENN.



Dempster-Dinosaur picks up Dinomaster on its tilting frame (top). The Dinosaur is now a collection unit for smaller containers, and the lifting arms of the Dinomaster have engaged the side channels of a refuse container (center). The refuse container is lifted overhead and emptied into the hopper of the compaction body, where a 60,000-pound pressure pack plate will reduce it to a fraction of its former volume (bottom).

The New Ditch Witch Trencher

Recently introduced by the Charles Machine Works in Perry, Okla., the Model M322-CR is proving itself to be an ideal machine for digging in rocky or frosty soil conditions. The crawler is available in either 9 or 12 horsepower models and is in addition to the well-known rubber-tired line of Ditch Witch machines.

The crawler machine features a jaw clutch mechanism for ease in steering and maneuvering. It gives a straight trench, is fast digging and is economical in operation.

For further information write WITCH MARKETING CO., 1959 W. FIR AVE., PERRY, OKLA.

100-hp Motor Grader

Model 330-H, available with GM 3-71 or Cummins V-6 BI engines, utilizes a heavy-duty constant mesh transmission with eight forward speeds up to 23.6 mph. It has just been introduced by LeTourneau-Westinghouse Co., which emphasizes that it does not replace the 85-hp model 330.

Front axle clearance on the 330-H is 25 inches; creeper gears are available as low as ¼ mph. The four reverse speeds range from 1.7 to 12.2 mph. Weights with standard equipment are 21,690 pounds with GM engine and 22,090 pounds with the Cummins.

A wide range of optional equipment and accessories are available for use with this 100-hp unit. For further information, write LETOURNEAU-WESTINGHOUSE CO., 230 NE ADAMS ST., PEORIA, ILL.

Valveless Filter Sets Own Backwash Cycle

This gravity water filter for municipal and industrial use is built around a very old device: the siphon. Combined with a filter bed in a compartmented tank, the siphon performs the backwash operation automatically; there are no pumps, valves, gauges, or manual or electric controls anywhere in the unit. According to The Permutit Co., actuation of the backwash cycle is accomplished at exactly the optimum moment without any outside aid, and the filter cannot over or underwash, and backwash or rinse cannot be accidentally run to service. The unit operates on a loss-of-head and can be used wherever gravity feed is feasible.

The filter consists of a vertical cylindrical steel tank divided into three sections: backwash storage chamber (at top), filter bed compartment, and collector chamber under a false bottom. The backwash storage space is designed to hold the optimum amount of backwash water in relation to the surface area of the filter bed below it. It always

(Continued from page 159)

FRANKLIN FABRICS UNIFORMS

373

Range 373 has symbolized the top quality Police and Fire Department Uniform Fabrics for over 25 years.

It is made in all weights for all climates.

Stock dyed
2 ply
Fast Colors
Uniformity of Shade

Corresponding qualities in worsted whipcords and elastiques; gabardines and tropicals in either 100% worsted or worsted/dacron blends.

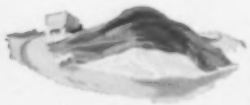
TO BE SURE, SPECIFY

FRANKLIN WORSTEDS

for additional information write to—
David E. Singer, Sales Agent
FRANKLIN WORSTED COMPANY
40 East 34th St., New York 16, N. Y.

Keep pavements bare all winter with Solvay Calcium Chloride

—SALT MIXTURES



This winter use the method of leading turnpikes that achieve "no shut-down" records despite the severest weather. Combine Solvay® Calcium Chloride with salt. Make sure you have ample stocks on hand, at money-saving bulk rates.* It can be stored alone, or mixed with salt, outdoors under tarpaulin covers, in indoor sheds or covered bins.

Bulk handling of Solvay Calcium Chloride is a one-man operation, both in loading and application. It can be used economically by large and small highway departments.

Calcium chloride-salt mixtures are effective at all temperatures and humidities. While salt's best range is 25-32°F., calcium chloride speeds melting at all temperatures, even down to below zero . . . provides the moisture salt needs to act. Calcium chloride liberates heat as it melts ice, which helps salt work faster. When you combine the two, applications can be lighter and less frequent. This reduces chemical consumption and lowers cost.

For *instant* skidproofing of icy surfaces, treat abrasives with Solvay Calcium Chloride. They hold fast in wind and traffic at all temperatures.

**Also available in moistureproof bags.*

Write us now. Request "ice control data." If you are interested in applying bulk handling to your set-up, ask for a Solvay representative to call. No obligation!

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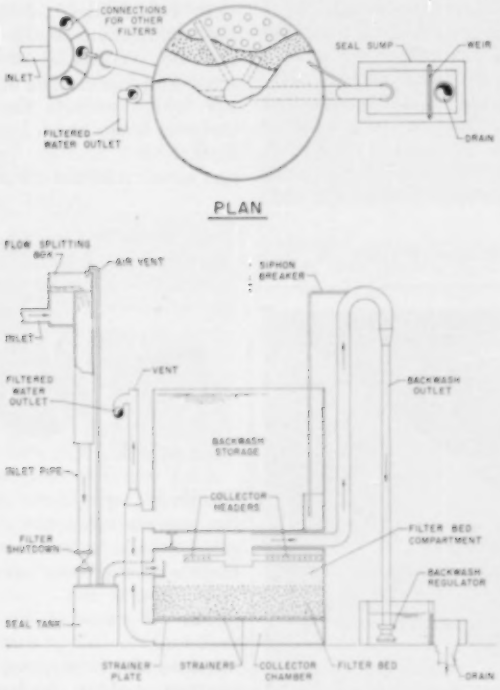
SOLVAY branch offices and dealers are located in major centers from coast to coast.

Automatic Valveless Gravity Filter



(Continued from page 157)

fills to the same height and gives uniform amount of backwash on every cycle.

The filter bed contains standard fine filter sand supported on a collection system of disc-type plastic strainers, developed by Permutit. This system is said to provide uniform collection of filtered water and uniform distribution of backwash water without the use of gravel. The unit can employ other types of filtering material, such as anthracite, or Neutralite, by modifying the rate of wash.

For further operation and design information, write Permutit Company, 33 W. 43rd St., New York 36, N. Y.

1961 Lark Police Marshal

Among the many engineering and styling advancements incorporated in the Lark Police Marshal for 1961 is a new economy-winning engine—a 289 cubic inch power plant which develops 210 horsepower at 4,500 rpm, with a torque rating at 2,800 rpm. A 4-barrel carburetor, increasing horsepower to 225 at 4,500 rpm and torque to 305 at 3,000 rpm is optional.

Larks available for Police Marshal special equipment are the Deluxe two-door and four-door sedans, the two-door and four-door station wagons, and the Studebaker Taxi designed for severe service. This choice of body styles and engines enable the Lark to be customized to service as patrol, pursuit or emergency vehicles.

An extensive list of optional equipment is available. Special op-

(Continued on page 160)

Lark Marshals meet the rigid, heavy service requirements of law enforcement work, and offer economical advantages to the law enforcement agencies and taxpayers they serve.

MORE THAN 2000 PRESTRESSED CONCRETE TANKS IN SERVICE

New 660,000 Gallon Stand Pipe, City of Wadsworth, Ohio.

Consider these features

- Minimum maintenance
- 75% construction cost spent locally
- Owners seldom return to other types
- Longest service life of any tank
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(Continued from page 159)

tions include reinforcements for sirens, underhood sirens, double-ended flashers, beacon ray lamps.

A. E. Fitzpatrick, fleet sales manager, reports that "twenty-six states and 291 governmental units in cities and counties have made fleet purchases of Larks and Studebaker trucks."

For additional information, write STUDEBAKER-PACKARD CORP., SOUTH BEND, IND.

Dozer Converts to Front-End Loader

The first model of the Hough "Payloader" line is now rolling from the assembly line. It has been designated the D-120 and is powered by a 300-hp turbo-charged diesel engine and weighs 55,000 pounds. Its three-way blade action includes lifting and lowering, forward and back pitch (total 35°) as well as side tilt (10° per side).

But the unique feature of this new rubber-tired dozing-pushing-loading machine is the fact that it can be converted readily into a front-end loader. The optional package which permits this conversion includes boom arms, hydraulic lines, bucket and linkage together with one element of the torque converter

for loader operation. According to the manufacturer, the entire change can be made in less than two eight-hour working days, although it has been done in one.

Other features of the basic D-120 unit include full-power-shift transmission, which requires no stopping for range shifts, hydraulic-power-boosted steering assist, power-transfer differentials on both axles for superior traction, lower center of gravity obtained through use of dry ballast material in all four tires.

The D-120 blade is 12⅓ feet wide at the cutting edge, 4¾ feet high. Clearance under the cutting edge at full lift height is 3⅛ feet. Digging depth below ground-level is 1½ feet.

For additional information and specification literature, write THE FRANK G. HOUGH CO., 710 SEVENTH AVE., LIBERTYVILLE, ILL.

LoDal®
Grapple Tilt

HYDRAULIC BUCKET

The LoDal Grapple Tilt Bucket is especially designed as the most effective machine made today for sweeper pick-up. The 42 inches of pavement drag gives completely clean pick-up with no need for manpower hand shoveling into the bucket. The hydraulic grapple (with balanced closing action) does all the work! Designed for a self loading truck to which it is mounted and for loading other units. Bucket capacities 3/4 and 1 cubic yards.

To Save You Money—

May we send you detailed information?

LoDal, Inc.
NORWAY, MICHIGAN

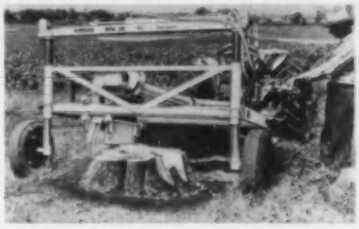
IBM's Dictating Machines

In announcing a new dictation product line called the IBM "Executary" dictation equipment, H. Wisner Miller, Jr., vice president and general manager of the electric typewriter division, says that the cost of the average business letter has climbed to $1.83, an increase of more than 60% since 1953. He said equipment such as dictation devices and electric typewriters can help reduce these costs by increasing the speed and production of office correspondence.

The Executary line is transistorized and recording is done on a magnetic belt. The belt can be used thousands of times and it is easily

mailed, filed or stored. For further information write to IBM, Electric Typewriter Division, 545 Madison Ave., New York 22, N. Y.

Shreds Stumps the Easy Way



Latest addition to the stump cutter line manufactured by the Vermeer Manufacturing Co. of Pella, Ia. is the Model P-15 Pow-R-Stump Cutter, driven by a standard tractor's power-take-off drive shaft.

A powerful, one-man operated unit, it handles any size stump up to 33 inches in height, and has a travel range of six feet from side to side and 33 inches forward and backward. It digs out the stump down to 15 inches below the surface of the ground and the remaining hole can be refilled with dirt and chips. Chips and tree roots rapidly rot underground. All hand work is completely eliminated.

Model P-15 is highly maneuverable, allows close quarter cutting to walks, fences, buildings, driveways and curbs without damage. It comes equipped with a retractable canvas shield to retain chips under the unit. And it trails easily behind tractor, truck or Jeep.

For additional information, write Vermeer Mfg. Co., Pella, Ia.

Revere's Photoelectric Control

This is a new photoelectric light control for automatically turning on street lights and turning them off when they are no longer needed. It is a cadmium sulphide photoelectric cell with a high dark resistance. The

(Continued on page 163)

made for play...

loves to work!

75 hp Starflite III by Evinrude—new 1961 version of boating's best-selling, big-powered outboard motor. New fixed-jet carburetion is combined with thermostat controlled engine temperature for peak efficiency under all conditions. Every advanced feature: Famous Jetstream Drive, electric starting, automatic choke, sea-going magneto ignition, two-way shock absorbers, quietest performance on the water. Smooth running V-4 engine with 89 cu. in. displacement attains full hp at leisurely 4500 rpm. High-torque, versatile power for a wide range of waterfront duties and commercial boating jobs. See your Evinrude dealer—listed in the Yellow Pages under "Outboard Motors."

Evinrude Motors, 4143 N. 27th Street, Milwaukee 16, Wis.
A Division of Outboard Marine Corporation
In Canada: Mfd. by Evinrude Motors, Peterborough

EVINRUDE
FIRST IN OUTBOARDS

GRIMCO Signs

THE BEST COSTS LESS

BECAUSE...
they last longer! and look better! meet U.S. standards!

OVER 200 WORDINGS IN STOCK
DIE-EMBOSSED ON ZINC COATED STEEL

Write for a quote

GRIMM STAMP & BADGE CO.
8105 Rosalie • St. Louis 17, Mo.

GOLDAK TRANSISTORIZED LOCATORS

Pipe Locator-Leak Detector
"Dualtronic"
Model LC-5T

The new "Dualtronic" combines the finest transistorized Pipe Locator ever developed with a high-gain Leak Detector to produce an effective and useful multi-purpose instrument. Designed specifically for Municipalities and Water Companies, the LC-5T assures pin-point detection of pipes, cables, mains and laterals and becomes a sensitive detector for water leaks simply by plugging in a crystal, rubber-encased microphone. Additionally, by a simple manipulation the new "Dualtronic" will pin-point valves, risers, boxes, and manhole covers. Now with transistors the versatile LC-5T is lighter, more sensitive, easier to operate, and it requires only flashlight batteries . . . Write today for further details on the "Dualtronic" and other Utility detection instruments.

The GOLDAK Company, Inc.
Leading Electronic Manufacturers Since 1933
1544 W. Glenoaks Blvd.
Glendale 1, Calif.

WORLD'S FINEST DETECTION EQUIPMENT MANUFACTURERS SINCE 1933

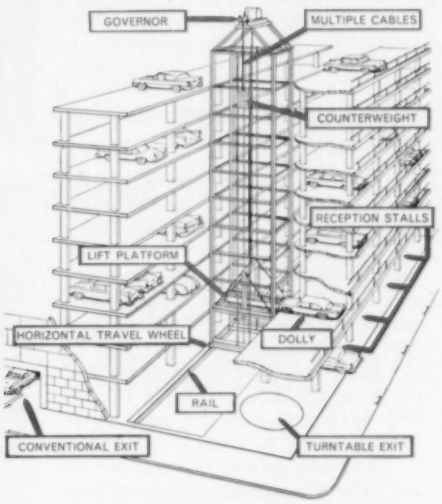
SAVE . . 1/3 on Land . . 2/3 on Labor . . 2/3 on Insurance

the original PIGEON HOLE PARKING

Precision-Parks More Cars Faster and at Less Cost!

From coast to coast, in downtown areas and shopping centers—where land cost is high or space limited—Pigeon Hole Parking System proves the most practical, profitable solution to metropolitan parking problems. Pigeon Hole Parking is modern, safe and efficient.

The storage space is steel or reinforced concrete banks of car stalls, or pigeon holes, facing each other across a corridor. A patented mobile electric-hydraulic elevator Car Parker, manned by an operator, gently picks up the car, rolls rapidly along the corridor on rails, deposits the car in the desired pigeon hole, and returns . . . all in 35 to 45 seconds! Picks up and delivers it in the same fast time . . . with complete safety.



All handling is mechanical. The customer drives into lower stall, locks his car, and receives parking check from attendant. A Pigeon Hole "Dolly" travels from either side of the Car Parker, raises the car, and brings it aboard. No jockeying, no dents, completely safe.

Pigeon Hole Parking is Performance Proved . . . with over 60 Units in the Western Hemisphere. Write us for the facts.

Pigeon Hole Parking System Distributors:

WESTERN INDUSTRIES INC.

Electric Parking Gate Division

2730 West 36th Place • Chicago 32, Illinois

FILTER SAND AND GRAVEL

Produced from an inland pit hence free from river contamination and foreign matter.

Shipment in bulk or bagged.

Many of the larger filter plants throughout the United States are equipped with our products.

PROMPT SHIPMENT

Inquiries and orders solicited

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Muscatine, Iowa

P.O. Box 307 Amherst 3-2711

Always Select The

EXECUTIVE INN

Indianapolis, Ind.

US 40-52-421 E. Washington and New Jersey

Executive Inn

100 ultra-modern, luxurious rooms in downtown. Beautiful Mayfair Dining Room, Jubilee Cocktail Lounge. TV and Telephones in all rooms. American Express and Carte Blanche Credit Cards honored.

BANQUET & MEETING FACILITIES

OTHER MOTOR HOTELS OPERATED BY

Executive-Inn MOTOR HOTELS CORPORATION

INDIANAPOLIS, IND.	CINCINNATI, O.	DAYTON, O.	DALLAS, TEX.
Gateway Motel	Mayfair Motel	Gateway Motel	Executive Inn*
Mayfair Motel	Drake Motel	Drake Motel	TUCSON, ARIZONA
Meadows Motel	North Plaza Motel	Terrace Motel	Executive Inn*
Executive Inn	Town Center Motel		ALBUQUERQUE, N.M.
LOUISVILLE, KY.	CALUMET CITY, ILL.	NORFOLK, VA.	Executive Inn*
Standiford Motel	Town & Country Motel	Admiralty Motor Hotel	*(Opens Soon)
Towne Terrace			

• For information — Write: Executive Inn, 401 E. Washington, Indianapolis, Indiana.

(Continued from page 161)

light level setting is adjustable from ½ to 4 footcandles, with normal factory setting of 2 footcandles.

Descriptive literature may be had by writing to: REVERE ELECTRIC MFG. CO., 7420 LEHIGH AVE., CHICAGO 48, ILL.

Revere's 4006 series controls are equipped with an electric timer to preset any desired "off" period and temporarily override the photoelectric cell.

Releases Scraper Film

A new 12-minute 16mm motion picture film in sound and color illustrates the versatility and operation of the 14-yard struck capacity Euclid All-Wheel Drive Model TS-14 scraper.

It brings out how this "little twin" brings big job efficiency to small and medium-sized jobs, broadens work scope, lengthens the working season, reduces equipment needs, and in many cases competes effectively with larger scrapers.

For advance booking of this TS-14 film, write to ADVERTISING DEPARTMENT, EUCLID DIVISION, GENERAL MOTORS CORP., CLEVELAND 17, OHIO.

Decal Marking Identifies Fire Hose Length

W. S. Darley now offers a series of 3½-inch yellow and black decal numerals to be used in any desired combination to identify fire hose.

Those shown in the accompanying unretouched photo were used on

(Continued on page 164)

How to Keep Track of Every Key

TELKEE KEY CONTROL

$73.90 Complete
(75 capacity)

TELKEE simplicity tags and numbers keys, in order. Visible index identifies keys by lock location, number, description.

TELKEE convenience shows all keys at a glance. Locates loaned or assigned keys instantly. Saves time, saves money.

TELKEE security provides complete continuous record of all keys issued. Key identities known only to authorized personnel.

Available in 10 models, 33 capacities from 21 to 2240. Compact cabinet of fine furniture steel, tens of thousands in use in offices, industrial plants, hotels, stores, schools, hospitals, and public buildings, large and small, in U.S.A., Canada, and overseas.

FREE *16 page booklet. No obligation. Write for your copy today.*

TEL KEE

P. O. MOORE, INC. GLEN RIDDLE 5, PA.

Crispin UNIVERSAL AIR VALVES

. . . positive, full-time air control when line is filled, in operation or emptied.

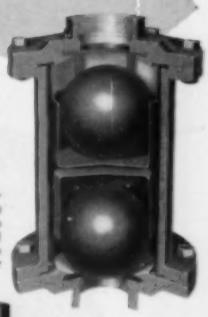
Crispin

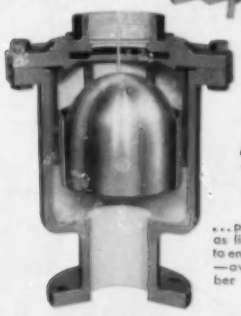
AIR CONTROL Valves

- peak efficiency
- maximum dependability
- minimum maintenance
- simplified construction
- easy accessibility

Crispin NEGATIVE PRESSURE AIR VALVES

. . . release air semi-automatically from pipeline siphons to end danger of throttled pipeline — available with either metal or rubber float.





Crispin AIR AND VACUUM VALVES

. . . permit air to escape as line fills, allow air to enter as line empties — available with rubber or metal float.

Write, wire or phone for complete information and your free copy of the Crispin Air Control Valve catalog.

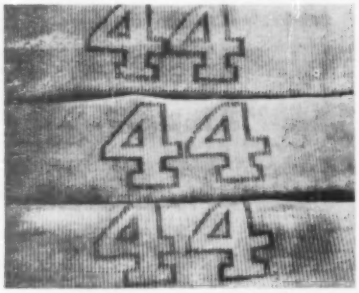
AIR CONTROL VALVES FOR OVER 50 YEARS

multiplex
MANUFACTURING COMPANY
BERWICK, PENNSYLVANIA
Dept. E

(Continued from page 163)

1,022 runs involving 458 working fires with 160 pumping hours. After 1½ years in use there was no bursting of hose at points where decals were applied. Tests have since been extended to 750 working hours over 2¼ years. The runs covered extremes of weather from August heat to sub-zero winter.

The decals were especially developed and produced for the Darley Co. by THE MEYERCORD CO., 5323 W. LAKE ST., CHICAGO 44, ILL.



Legibility after exposure and abrasion demonstrates the superiority of the decal method of marking fire hose.

Announces Automatic Asphalt Plant

The new self-contained 3140 Roadmaster asphalt plant, just introduced by Wylie Mfg. Co., Inc., has an output of 30 to 40 tons of hot mix per hour and up to 50 tons of cold mix per hour. It's built to operate on its own base, eliminating concrete piers, and is completely automatic, assuring consistent quality to mix.

Aggregate is charged directly from the material hopper into the dryer, eliminating a cold material elevator and possible clogging of chutes. And to aid in adjustment and ease of cleaning, the dryer combustion chamber and burners pivot away from the end of this dryer, making the interior of the dryer, elevator boot and combustion chamber readily accessible.

The plant comes equipped with rotary dryer, twin-shaft pugmill, batching hopper, material hopper, hot elevator, dust collector, power plant, natural gas or low pressure oil burner heating system, and a 200-gallon asphalt metering system, all mounted on a single frame.

For complete information, write WYLIE MANUFACTURING CO., INC., P. O. BOX 7086, OKLAHOMA CITY, OKLA.

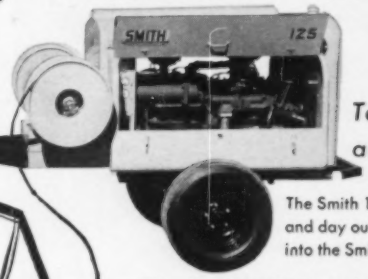
Western Industries Distributes Pigeon Hole Parking

WESTERN INDUSTRIES, INC., 2736 WEST 36TH PLACE, CHICAGO 32, ILL., has been made United States distributor for Pigeon Hole mechanical parking installations.

The agreement gives Pigeon Hole 40 national sales outlets and a sales force of more than 100 people. Western Industries' president, George L. Hudson, said Western Industries is entering the mechanical parking field because "the increasing number of shopping centers is putting terrible pressure on downtown areas. Ten more mechanical parking companies have come into the field since Pigeon Hole started in 1948. Pigeon Hole has made more than twice as many installations as all the others combined."

TAKE THE "PRESSURE" OFF YOUR AIR COMPRESSOR PROBLEMS . . .

Take "Hardrock Smitty's" advice and ***GO SMITH!***



The Smith 125 Air Compressor delivers over 125 cfm day in and day out. Rugged construction, smooth performance built into the Smith 125 means efficient, economical operation.

The Smith 125 has the most wanted features:

- low initial cost
- low operating cost
- easy maintenance
- simple compact design
- 12 volt electrical system
- 125 cfm at 1165 RPM
- availability of parts

Compare price . . . compare job results—you'll Go Smith!

Ask your dealer for an "on the job" demonstration.
(Write us for complete information and the name of your nearest dealer.)

SMITH AIR COMPRESSORS

GORDON SMITH & COMPANY, INC., Bowling Green, Ky.

Drive-Up Trash Receptacles

Here's a receptacle people can use without leaving their cars. Highway maintenance men report improved cleanliness on highways ranging up to 50% and more where these units are spotted. For full information, write Bennett Mfg. Co., Inc., Alden, N. Y.

Package-Type Sewage for Canada

Factory built sewage lift station and sewage treatment plants will be manufactured in Canada at 866 Lakeshore Rd., New Toronto, Ontario, as well as in their Lenexa, Kansas plant according to Compere Loveless, managing director of Smith & Loveless, a Division of Union Tank Car Co., Kansas City 15, Mo.

Self-Dumping Power Barrow

This unit furnishes great convenience when moving rocks, debris, mulch (above) or other bulky materials. It is one of several new attachments recently introduced by Gravely for its tractor. The barrow attaches to the front of the tractor with only four bolts, hauls up to five cubic feet of material or approximately 800 pounds, and dumps easily—just raise the handle. Fully illustrated catalog literature giving full facts can be obtained from GRAVELY TRACTORS, DUNBAR, W. VA.

New Oliver Management Team

Samuel W. White Jr., recently-named president of the new Oliver Corporation subsidiary of The White Motor Company, 400 W. Madison St., Chicago 6, Ill., has made known the company's management organization, consisting of many of the executives of the old The Oliver Corp. but with several title changes.

B. Haugen, vice president and treasurer of the former company, is now vice president-finance of the new Oliver Corp. D. W. Koegle, vice president in charge of marketing with the former company, has been named vice president-market-

(Continued on page 166)

Cres LINE
the #1 PLASTIC PIPE
SPECIFY
Cres LINE KL
#1 FOR WATER SERVICE LINES
• Easy to join
Costs 50-75% less installed than metal pipe
• NSF approved for drinking water use
• Made of virgin ABS Type II resins
• Remarkably resistant to corrosion
• Also excellent for natural gas lines
PIONEER MEMBER OF
FIRST in research!
FIRST in quality!
GUARANTEED right . . . in writing!

WRITE FOR FREE DESCRIPTIVE FOLDER

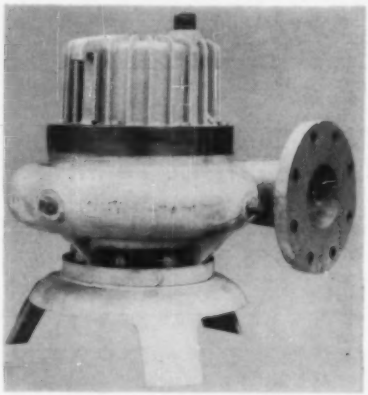
COMPLETE TECHNICAL AND ENGINEERING SERVICES AVAILABLE
CRESCENT PLASTICS, INC.
Dept. C-0, 955 Diamond Ave. • Evansville 7, Ind.

(Continued from page 165)

ing, and L. P. Ritchie, former vice president in charge of manufacturing and purchases, has become vice president-manufacturing in the new organization.

T. W. Kavanaugh, controller of the old The Oliver Corporation, has been appointed treasurer of the new, with S. A. Baker moving up from assistant controller to controller. Donald W. Alfvin continues as secretary.

Oliver Corporation operates plants in Battle Creek, Mich., South Bend, Ind., Shelbyville, Ill., and Charles City, Ia.



Installation of these new F-M nonclog submersibles in any sump or pit requires only one piping connection and a plug-in electrical connection.

Nonclog Submersibles

These compact all-in-one pump and motor units handle large solids and stringy materials, such as raw or treated sewage, light sludge and slurries. They are equipped with a one-piece cast iron impeller either in two-blade design or, where excessive clogging would otherwise be encountered, in the Fairbanks-Morse bladeless impeller design. The pumps come in 2-, 3- and 4-inch sizes.

Totally enclosed non-ventilated induction motor, available in a range of ¾ hp to 7½ hp, has an oil-filled interior and finned exterior for rapid cooling in underwater operation. One-piece motor and pump shaft of #316 stainless steel offer maximum resistance to corrosion.

Typical applications of these pumps include storm water drainage, small sewage lift stations and general purpose sump drainage. For additional information, write FAIRBANKS, MORSE & CO., 600 S. MICHIGAN AVE., CHICAGO 5, ILL.

Truckster for Light Hauling

A new model of the Cushman 780 Truckster, equipped with a Percival dump hopper, will be especially useful for use in street cleaning, trash collection, light construction hauling, and other similar jobs. It has an 11 cu. ft. dump hopper that will carry an 800-lb. payload. It gives economical operation with a small original investment.

In construction, the Cushman 780 Truckster is powered by a 7.95-hp, 4-cycle high compression engine and has a constant mesh transmission with three forward and one reverse

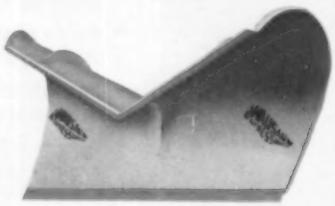
BUILT TO "take it"

WAUSAU PRODUCTS

The WORLD'S MOST COMPLETE LINE of SNOW REMOVAL EQUIPMENT!

Now Introducing the REVOLUTIONARY NEW EXPRESSWAY

- Wausau Snow Plows - Vee and Blade
- Wausau Snow Wings
- Wausau Underbody Truck-grader Ice Blade
- Wausau Sno-Thro Loader and Thrower
- Wausau Material Spreaders
- Write for full details on all Wausau Products . . . Literature available on every item.

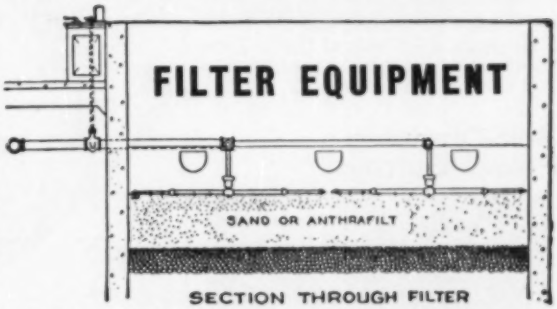


The WAUSAU EXPRESSWAY snow plow is a high speed power reversible blade plow designed for today's modern expressways, toll road and airports. It is the most modern and radical design change in the snow plow industry.

WAUSAU IRON WORKS
Pioneer Snow Plow Builders
WAUSAU, WISCONSIN

PALMER

FILTER EQUIPMENT



SECTION THROUGH FILTER

Filter Bed Agitator Advantages

Requires an average of 40% less wash water

Eliminates mud balls

Prevents cracking and shrinking of the beds

Produces "new" sand after short period of normal operation

Enables you to increase filter runs up to 50%

Anthrafilt Advantages

Doubles the length of filter run attainable with sand and quartz media

Requires one-half as much waste water

Filters are out of service less because of the shorter wash cycle

Coating, caking or balling with mud, lime, iron or manganese reduced to the minimum

Write for Circular

PALMER FILTER EQUIPMENT CO.
P. O. BOX 1655, ERIE, PA.

speed. It also has hydraulic brakes on all three wheels.

Additional information about the new Cushman 780 Truckster with a dump hopper is available from CUSHMAN MOTORS, 946 No. 21ST, LINCOLN, NEB.

Liquid Level Control for Sewage Ejector System

KOMLINE-SANDERSON ENGINEERING CORP., PEAPACK, N. J. and BRAMPTON, ONTARIO, CANADA, recently introduced this electronic liquid level control for use with sewage ejectors.

Features of the control include a completely transistorized circuitry that does not overheat and does not exceed 10 watts power consumption; a resistance type control to establish desired discharge cycle from 10 to 70 seconds; and a high water alarm system incorporated into its design.

The company reports that all standard K-S sewage ejectors of the electrode control type are now being equipped with this new liquid level control, which is also available from installation on older ejectors of the electrode control type.

For further information, request Bulletin No. KSM-4.

The new liquid level control for sewage ejectors utilizes only a single, short probe. Its compact case, with removable cover is moisture proof.

Dart Pick-up Highlights '61 Dodge Truck Line

A stylish Dart half-ton pick-up headlines a completely new series of light and medium-tonnage 1961 Dodge trucks. The new models are reported to feature the only inclined 6-cylinder gasoline engine in the trucking industry.

"This year Dodge is introducing another entirely new series of trucks, which range from the Dart pick-up to a 2½-ton heavy tractor. Styling, chassis, steering suspension system—all are new," announced M. C. Patterson, Dodge general manager.

He stresses fuel economy; road stability; 140 basic models including conventional-cab, cab-forward,

(Continued on page 168)

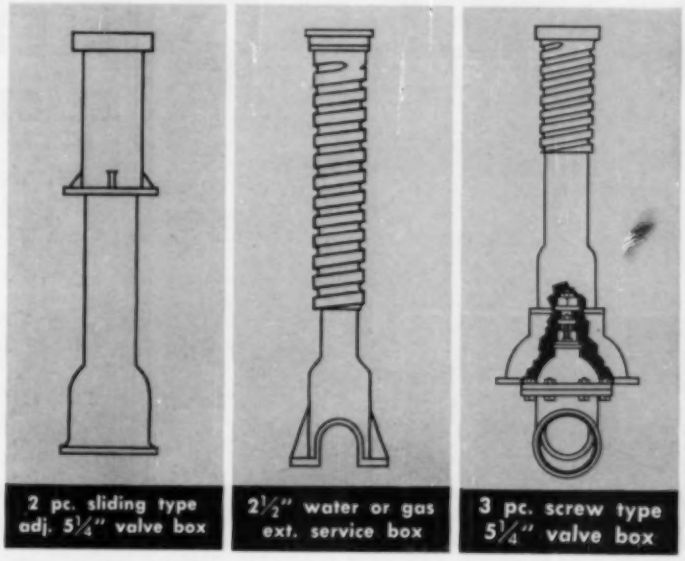
The new '61 Dodge pick-up will be of interest to municipalities because of its economical operation. It is a half-ton unit which features a new 140-hp inclined 6-cylinder engine.

BUFFALO PIPE & FOUNDRY

BUFFALO MUNICIPAL CASTINGS

are available in every size and style!

No matter what size, shape or style municipal casting you may desire—you're practically sure to find a "Buffalo" casting to serve your needs. Or, where desired, castings may be made to your own specifications. Whether you need valve, service or roadway boxes, meter boxes, manhole rings and covers or other municipal castings, you'll find all "Buffalo" castings designed for service and dependability.



Prompt quotations given on all your standard or special gray iron or non-ferrous castings.

SINCE 1930
BUFFALO PIPE & FOUNDRY CORP.

Write or wire Dept. J for Bulletin M11.
BOX 55—STATION B DE 6764 BUFFALO 7, N. Y.

(Continued from page 167)

4-wheel-drive, forward control, school bus chassis and tandem units with 11 gasoline engines with from 101 to 228 hp and eight diesels with from 160 to 250 hp.

Darts are manufactured by Dodge Division, Chrysler Corp., Box 1259-D, Detroit, Mich.

World's Biggest Tractor-Mounted Backhoe

That's the Parsons-Shawnee 1500, according to the Parsons Co., manufacturer of trenching machines and utility tractor attachments.

The new hoe is reported to have greater digging depth (15 feet), higher loading height (12½ feet), and longer reach (20¾ feet) than any other tractor-mounted backhoe now available. It mounts on all popular makes of utility tractors with only four pins, providing fast, easy attaching and detaching.

New features on the 1500 include rubber stops mounted on each side of the frame to cushion the pivot assembly; self-aligning ball bearings

at all wear points; telescoping non-skid stabilizers, and adjustable "dig-all" bucket to handle all types of excavating including straight down digging.

For complete information, write the Parsons Co., Division of Koehring Co., P. O. Box 431, Newton, Ia.

Parking Lot Template

A pocket-size plastic Template is now available for accurate layouts of any parking lot, regardless of size or shape. Its simplicity permits any person connected with traffic control to make the layout in less time than it formerly took a draftsman.

Template kits, including Instruction Manual and layout sheets, are available from The Parking Meter Division of M. H. Rhodes, Inc., Hartford 6, Conn., at $5 per kit.

New Crawler Tractors

Three new tractors with matched utility equipment are part of the Allis-Chalmers 1961 line of utility tractors. The new units are the D-15 utility wheel tractor and the H-3 and HD-3 utility crawlers. They are designed with a wide range of matching equipment for construction, materials handling and maintenance applications.

Manufacturer's rating of the D-15 is 48 hp. It features a heavy duty, non-adjustable front axle and 24-inch rear wheels. The H-3, powered by a 43-hp gasoline engine, and the HD-3, featuring a 40-hp diesel engine, are both in the 6,000-pound class.

Also introduced are a line of utility tractors which are newly

FASTER

SNOW REMOVAL...

with...

MONARCH

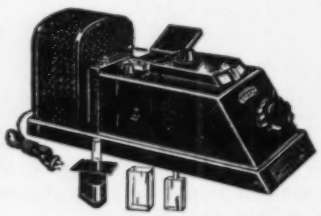
POWER HYDRAULIC CONTROLS

Faster . . . because one man controls the plow from the cab . . . instant up-and-down action with the flick of a wrist. A Monarch control can be quickly installed. Pays for itself in time saved! See your dealer. **Send for free folder today.**

MONARCH ROAD MACHINERY COMPANY
1331 Michigan St., N.E. Grand Rapids 3, Michigan, USA

KLETT SUMMERSON
ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

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The Huskie, Model H260L, is powered by a 180-hp diesel engine. It has a 2-speed, full-floating, 23,000 lb. capacity rear axle plus a special front-end and frame. It is a product of BROCKWAY MOTOR TRUCKS, CORTLAND, N. Y., and has been designed especially for street maintenance requirements.

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(Continued on page 171)

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5¼" two-piece sliding or screw type cast iron valve boxes, covering 4" through 10" valves.

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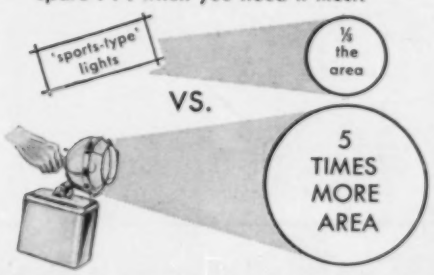

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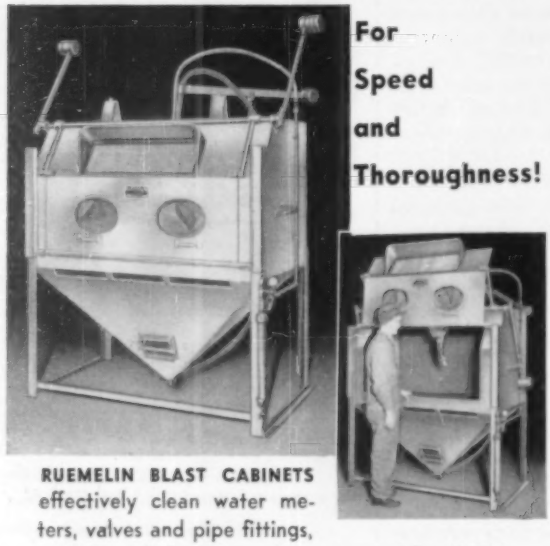

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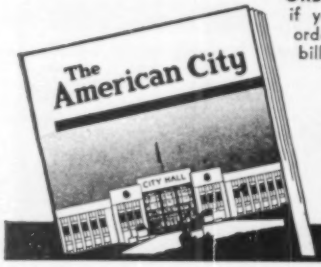

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(Continued from page 169)

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Purchasing News Briefs

• **American Pipe and Construction Co.**, Monterey, Calif., has acquired all outstanding stock of Sterling Concrete Pipe Co. of Madison, Calif. Both organizations manufacture pipe for water mains, sewerage lines and drainage systems.

• word from John Madden, president of **James B. Clow & Sons, Inc.**, Chicago-based manufacturer of cast iron pressure pipe used primarily in underground water and gas distribution systems, reports the purchase of the assets and business of the Streator Drain Tile Co. of Streator, Ill., producer of vitrified clay sewer pipe, drain tile and other clay products used in sanitary storm sewers and in other waste drainage lines.

• a joint consulting and comprehensive engineering service embodying community planning, zoning, urban renewal, public works design and construction supervision, and designed to assist communities in solving growth and modernization problems, has been announced by **Lockwood, Kessler & Bartlett, Inc.**, Syossett, N. Y., civil engineering consultants, and **Raymond & May Associates**, Pleasantville, N. Y., community planning consultants.

• Travelift & Engineering, Inc., Sturgeon Bay, Wis., manufacturer of mobile straddle carriers, has been purchased by **Drott Manufacturing Corp.** of Milwaukee and Wausau, Wis., manufacturer of front-end loading equipment and a wide range of material handling equipment. Travelift will operate as a division of Drott.

• a newly equipped bronze foundry with a melting capacity of 12,000 pounds per day is now in operation at **Darling Valve & Manufacturing Co.**, Williamsport, Pa. The modernized foundry almost doubles the daily capacity of the old foundry, provides better quality material and can handle up to 1000-pound castings. It now produces valve parts such as seats, rings, stems, bodies, sleeve bearings, disc rings, solid discs, wedging mechanisms, yoke stem and clamp nuts. Parts produced for Darling hydrants include nozzles, operating nuts and drain rings.

• **Cornell, Howland, Hayes & Merryfield**, Consulting Engineers, with principal office in Corvallis, Ore., announces the opening of an office in the Logan Bldg., Seattle, Wash., with Holly A. Cornell as resident partner.

• orders from Consolidated Edison Co. for two large steam boilers to be installed at the company's new Ravenswood Station in New York City, are reported by **Combustion Engineering, Inc.**, New York 16, N. Y. The boilers will generate steam for two 357,000 kw turbine generators, and will burn gas or oil initially, pulverized coal in the future.

Engineer Training Conference

As part of its field force expansion program, the Crouse-Hinds Co. of Syracuse, N. Y., is training a group of product engineers at the plant in all four of the company's lines: condulet electrical equipment, floodlights, aviation lighting and traffic control. They are pictured here with A. F. Uhrlandt (seated third from left), director of field sales. Upon completion of their studies, these men will return to field offices across the country to continue their on-the-job training.

ABOUT PEOPLE

G. N. Proctor, vice president and general manager of **The Permutit Company, New** York 36, N. Y., has announced the appointment of H. I. Edwards, vice president, to the post of general manager of Permutit Water Conditioning Inc., to handle manufacturing and sales of Permutit home water softeners. Richard S. Carrington will continue as vice president of sales for this new division.

Julius Yetka, general manager of The Permutit Company's Industrial Division, announced the advancement of Daniel J. Saunders, vice president, to the General Manager's staff. James I. Munson, formerly assistant manager of industrial sales, was promoted to the post of manager, industrial sales.

Chas. Schwarzler *Henry Ehrisman*

The Foxboro Co., Foxboro, Mass., has added a marketing division which will serve its associated companies in England, Canada, Holland and Japan, as well as the U. S. market. Vice president of marketing Charles Schwarzler heads the new division and will be responsible for planning and directing the development of new market areas and disseminating Foxboro instrument engineering information throughout the world.

Sales growth in the domestic market has been reflected by the appointment of Henry O. Ehrisman as vice president and U. S. general sales manager. His chief responsibility will be the company's 61 branch offices in the U. S. and related home office sales operations.

As a result of reorganization of the management of the **International** truck sales department, Duane F. Kuntz, formerly assistant manager of sales, is now divisional sales manager. He will have full responsibility for the direction of all International truck sales activities.

Robert A. Fosnaugh, design engineer with **Harland Bartholomew and Associates** in Memphis, Tenn. since 1956, has been promoted to office engineer. In his new position, Mr. Fosnaugh will be responsible for all highway design performed by the Memphis office.

Four major executive appointments have been announced by **Fairbanks, Morse & Co.,** Chicago, Ill.

Bjarne R. Eng, controller since April 1959, has been named treasurer. He also continues as vice president. Bernard A. Feuerstein, a partner in the law firm of Scribner and Miller for two years, has been appointed secretary as well as general attorney. Richard E. Isaacson succeeds Eng as controller. Chris E. Clausen was appointed vice president in charge of the scale division at Fair Lawn, N. J. He also continues as general manager.

Richard E. McClaine has been named central district manager of the **Baughman Manufacturing Co.,** Jerseyville, Ill. His territory includes all states east of the Mississippi River and north of Mississippi, Alabama, Georgia and North Carolina. Like all Baughman salesmen, he is a licensed pilot and will cover this large area in a Cessna 180 plane.

Richard McClaine

Robert P. Straetz has just been named vice president and sales manager of **Homelite,** a division of Textron Inc., Port Chester, N. Y., and manufacturer of pumps, generators, chain saws and blowers. He will take over some of the duties of Nelson Thompson, executive vice president.

Robert Straetz

Leonard (Lee) Nechine has been appointed to the position of assistant manager of **Chicago Pump,** manufacturers of pumps and sewage treatment equipment. Mr. Nechine was formerly operations manager and has served in various capacities with Chicago Pump for the past twenty-one years.

Lee Nechine

Chester Products, Inc., Hamilton, Ohio, manufacturers of Chester all-aluminum swimming pools and Diavac filter systems, has promoted Roger W. Ach, formerly vice president of sales, to the position of vice president and general manager of the company.

Russell L. Culp, Chief of the Water Section of the Kansas State Board of Health, has joined the engineering staff of **Cornell, Howland, Hayes & Merryfield, Consulting Engineers.** He will be located in the Corvallis, Ore. office and will work primarily on problems of water supply, treatment and distribution. He will join the present staff of water engineering specialists under the general supervision of Archie H. Rice, partner in charge of water works engineering.

The appointment of J. E. "Gene" Baughman to the newly created post of general sales manager of the **Reed Manufacturing Co.,** Erie, Pa., has been announced by Richard Wright, vice president of the well-known manufacturer of pipe tools and machinists vises.

Ray G. Rinehart, for 11 years Michigan and Indiana district manager for **James B. Clow & Sons, Inc.,** Chicago 80, Ill., has been appointed vice president and assistant general manager of the Streator Clay Pipe Co., a recently purchased Clow subsidiary at Streator, Ill.

Ray Rinehart

George E. Gunther of Elyria, Ohio, has been appointed domestic sales manager of the Trojan tractor shovel line of **The Yale & Towne Manufacturing Co.,** according to an announcement made by Robert G. Allan, general manager of the Trojan Division. Mr. Gunther will make his headquarters at the Trojan Division's central office in Batavia, N. Y.

George Gunther

Robert W. Martens has been named division manager, Eastern Division **Armco Drainage & Metal Products, Inc.,** according to word from W. O. Robertson, company president. Martens, who was formerly assistant manager, succeeds T. M. Neibling, who is retiring, and will continue to headquarter at the division's headquarters in Baltimore, Md.

Robert Martens

The appointment of William Drexler as product manager and that of Thomas L. Mancuso as product manager-surveying products, was recently announced by Edward T. Grogan, market planning director-instruments miscellaneous

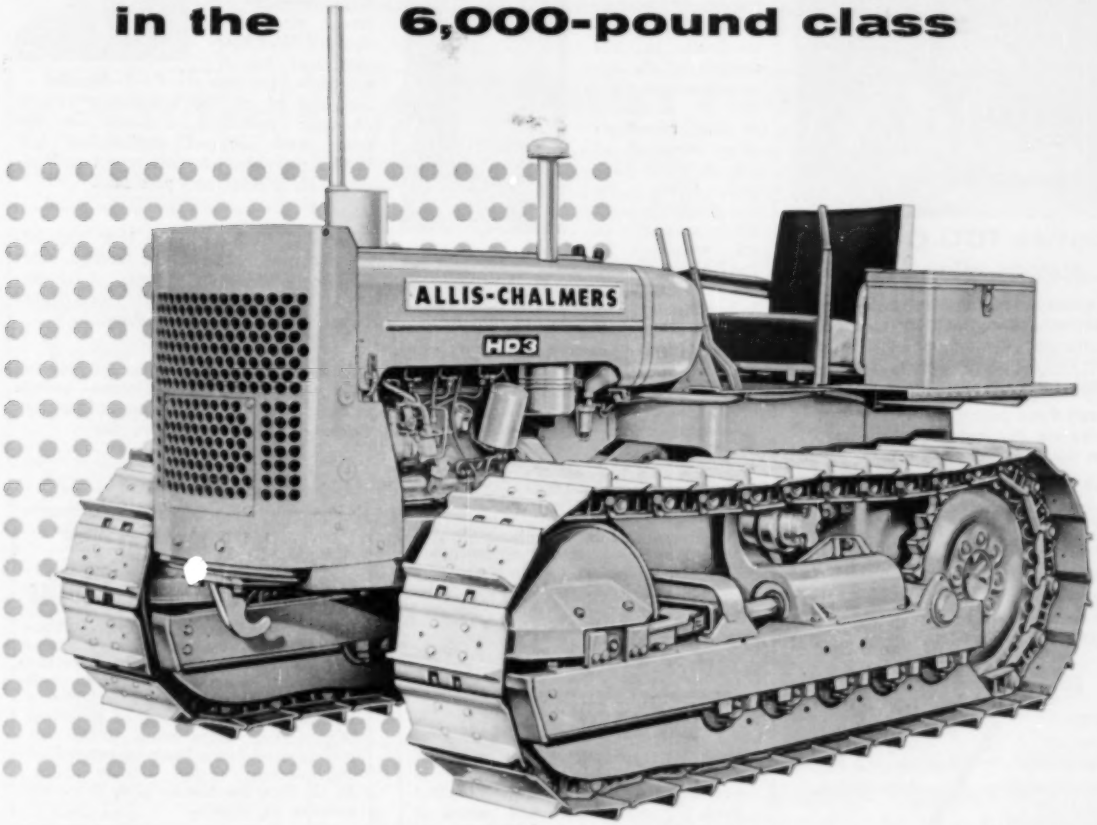
(Continued on page 174)

new

H-3 GASOLINE-POWERED

HD-3 DIESEL-POWERED

TOUGHEST COMPACT CRAWLER in the 6,000-pound class



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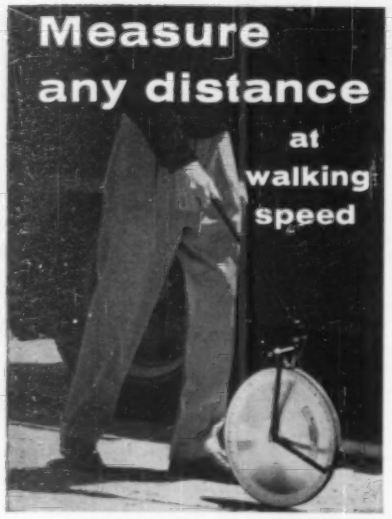

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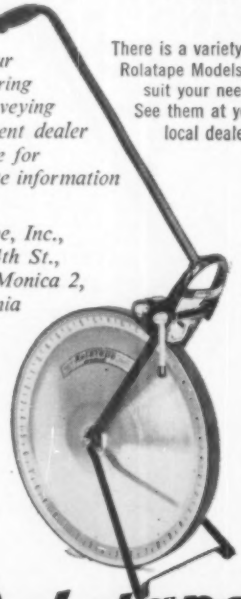

Rolatape
Measuring Wheels

About People

(Continued from page 172)

products, **Keuffel & Esser Co.,** Hoboken, N. J. Another appointment at K & E is that of Thomas F. McGovern, who was named marketing manager of Keuffel & Esser of Canada, Ltd.

Frank Marold, sales vice president of the **Griffin Pipe Division, Griffin Wheel Co.,** Council Bluffs, Ia., has announced the appointment of Willard F. Klimmek as sales representative assigned to the St. Paul District Office. He was formerly plant office manager of the company's St. Paul plant.

Willard Klimmek

Automatic Control Co., St. Paul, Minn., has named William W. McGuire, former eastern regional sales manager out of the St. Paul home office, as manager of its first factory branch sales office in Chicago, which is located in the Engineers Bldg., 225 W. Wacker Drive.

Frank J. Nunlist has been appointed to the new position of vice president-operations of **Worthington Corp.,** Harrison, N. J. according to Hobart C. Ramsey, chairman. In his new position Mr. Nunlist, formerly a group vice president of Worthington, will be responsible for the activities of all the company's sixteen domestic operating divisions in ten states and regional engineering and service activities. He will report to Walthem H. Feldmann, president.

F. J. Nunlist

John C. Taliaferro has been appointed manager of hydraulic dredge sales at **Morris Machine Works,** Baldwinsville, N. Y. producer of centrifugal pumps and hydraulic dredges.

Donald T. Koch has been appointed manager of the new Detroit branch sales office of the **Cooper-Bessemer Corp.** of Mount Vernon, Ohio.

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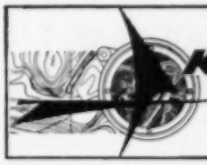

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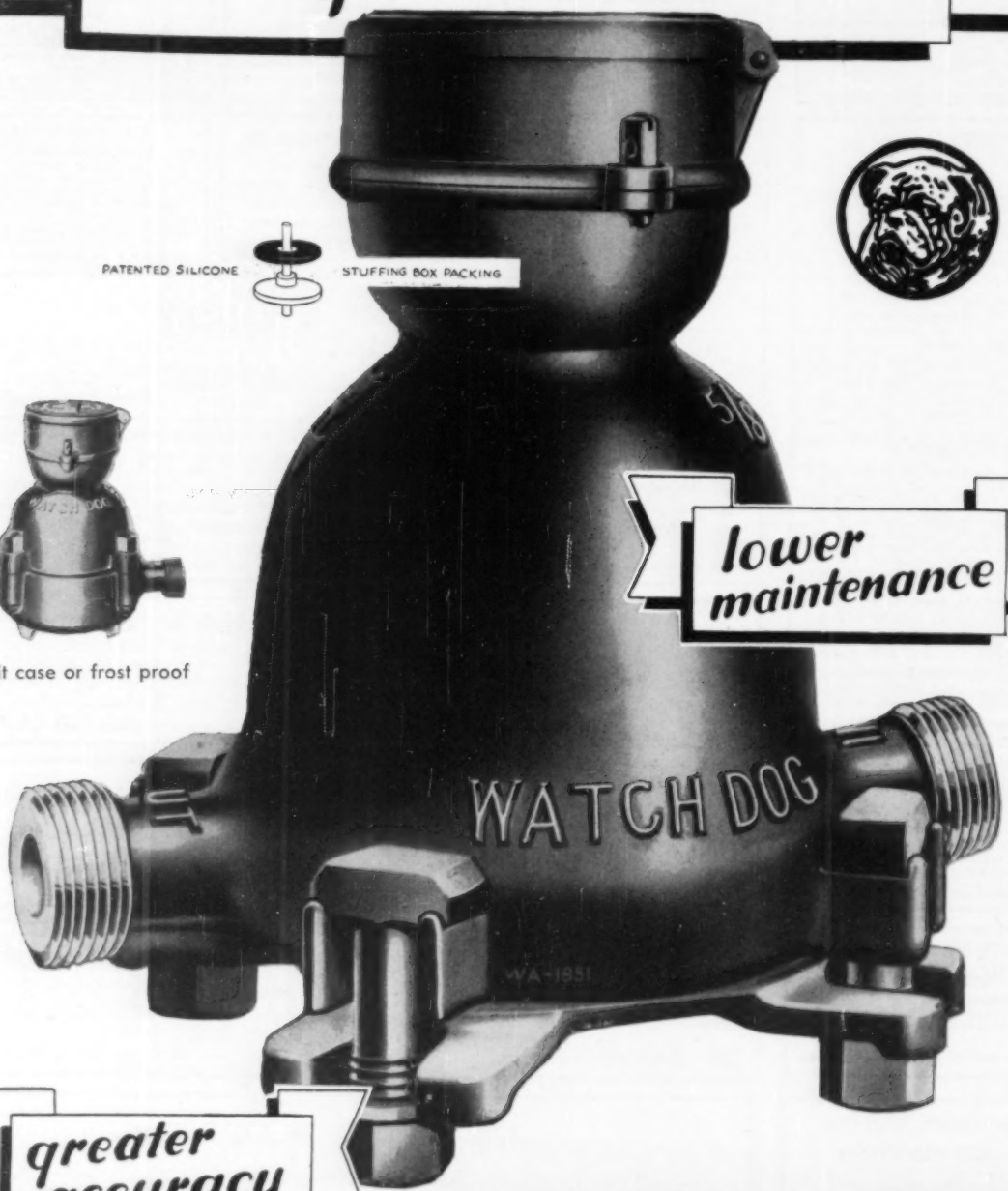

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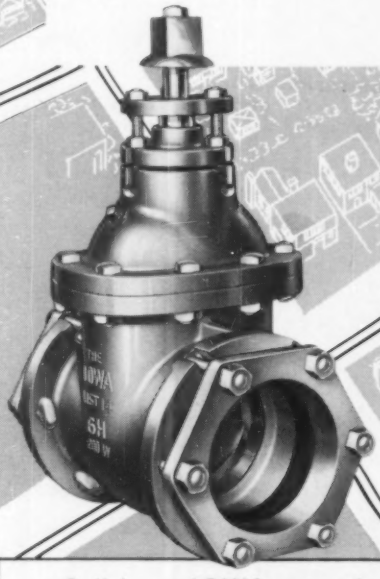

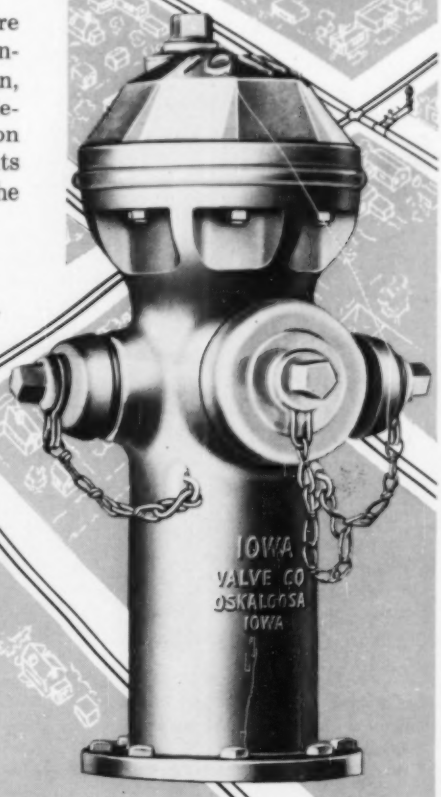

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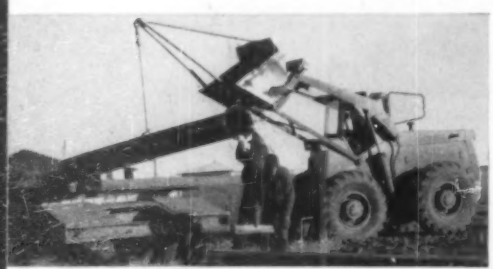
Performance of this power-steered, power-shifted, four-wheel-drive Michigan was so good the City six months later bought a second Model 85A.

Today—counting all costs—the two Michigans are doing *so much more work* city officials can schedule 20% more street, alley and water-main building and rebuilding per dollar of budget.



Another of Michigans' many jobs: handling water pipe. This section is 16' long, weighs 2,000 lbs. Machine **can lift** 9,000 lbs.

Save hours of travel time

Michigan 26 mph go-anywhere mobility accounts for some of the increase. Mr. Swingley reports a Michigan often travels to a job, completes it, and is on its way again before crawlers could have been trailer-loaded and hauled one-way.

60% faster loading trucks

Similar advantages have been demonstrated *on* the job. Loading hard-packed pit-run gravel, for instance, a 96 hp Model 85A needs only 2 minutes, often less, to heap a 6 yd truck. Same job with 1-yd crawler-loader used to take 5 minutes.

Save $1,000 yearly repair costs

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